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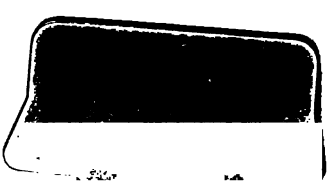
NATURE'S WONDERS

REMARKABLE SCENES
IN FOREIGN LANDS



BIBLIOTHECA · BODLEIANA ·

GROTTO—MAMMOTH CAVE, KENTUCKY.

PICTURES

OF

Remarkable Scenes in Foreign Lands.

. . . "of antres vast, and deserts idle,
Rough quarries, rocks, and hills whose heads touch heaven,
It was my hint to speak."

SHAKSPEARE.

BIBLIOTHECA BRITANNICA

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PREFACE.

THE following brief sketches of a few outlying regions of the world will, we trust, prove not unacceptable to juvenile readers, and of some little avail in adding to the stores of juvenile knowledge. The regions described are all places of interest, have all been thought deserving of exploration, at risks, in many cases, which, to the explorer, were infinite; and have been pronounced worth all the discomfort and sacrifices undergone in visiting them. Many of them are spots which, from various causes, are capable of only temporary sojourn, and all are but rarely visited, and little known. Those who have seen them have thought them worth describing to those who have not; and the interest which attaches to them, they and their readers feel to be a human one withal. Mere wastes, in most instances, of snow or sand, of solitude or darkness, they are not unconnected with human fortunes, and they make, both directly and indirectly, appeals to the

human heart. The dreariest has had a history and seen better days, though it now lies cold and dead; and forms a high-lying or out-lying, but integral, portion of those rock foundations which bear up the world and man's life. All the places described, however, are not, throughout at least, of this nature; but lie, some within the limits of possible, nay actual, existence, and a few even within the region of tropical life. But all these either verge on the former, or are of similar origin and conformation, though they are now clad with verdure and capable of yielding shelter and sustenance to man. The products, as well as the aspects and workings of nature, in these regions, are more or less hinted at; and the sketches we have given are each accompanied by admirable woodcut illustrations, which faithfully exhibit features to a great extent physiognomic of the whole district.

J. W

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NATURE'S WONDERS.

I.

The Mauritius.

THE Mauritius is an island of irregular oval shape, and exactly twice the size of the county of Edinburgh, situated in the Indian Ocean, 500 miles east of Madagascar, and about 200 miles within the southern verge of the Torrid Zone. Colonized by the Dutch in 1644, and occupied afterwards by the French for nearly a century under the name of the Isle of France, it became a British possession in the year 1810, which it has ever since continued to be. The English, at the same time, became masters of the Island of Bourbon, which is about 100 miles south-west, and a third larger; but, by treaty in 1814, while Mauritius was retained, Bourbon was restored to the French, to whom it still belongs. These two islands, though in such close proximity, are in many respects very dissimilar; Bourbon, looking one huge mountain mass with

several summits, one of which, called the Sugar-loaf of Snows, is 10,000 feet high, and another, said to be the most active volcano in the world—erupting twice a-year—is 7200 feet. There are wastes in it of mere ashes, lava and volcanic wreck, equalling, it is said, one-sixth of its area, and, though the rest is fertile, only one quarter is under cultivation, while its climate is unhealthy to the last degree, and its shores dangerous, and often fatal, to shipping. The Mauritius, on the other hand, though not without abundant traces of volcanic agency, and covered with mountains, has none of its peaks so much as 3000 feet in height; and these, when seen from a distance, resemble a cock's comb. Approached nearer, the peaks look like fingers pointing heavenward, and are for most part feathered to their summits with tree-foliage. The forms of the mountains are as beautiful as they are varied. Some present large vertical walls, others rise towering aloft in pyramids; some, as we have said, are covered to the top with thick wood, others only half way up, and these terminate in a point of rock, which shoots suddenly upward smooth and bare from a green ocean of foliage. They are cut up in all directions by lovely valleys, and steep, narrow gorges; the whole enveloped for most part in a rich, balmy atmosphere, and overlooked by a cloudless sky of the purest azure. The gorges and valleys are one and all, at certain seasons, swept by noisy torrents, which, when united, enter the sea by some twenty, or thirty, channels, or rivers. These rivers are frequently broken and enlivened by picturesque cascades—instance, those of the River

Galets and Chamarel. The former of these, though of difficult and even dangerous approach—as most of them are—is, it seems, well worth all the risk run in reaching it. Formed by a river of the same name, it falls from a height of 600 feet over several groups of rocks of a ferruginous tint, which are covered with ferns and green soft moss-beds.

The soil of the island is of a red-rusty colour, from the presence of iron; so hard, when dry, that only a hatchet will break it; but when moistened by rain, viscid and tenacious, yet easily cultivated, and of the richest quality. It is covered throughout with often thickly scattered blocks of rock, or boulders, of a size varying from that of the human hand to that of masses of a ton weight; and these, too, are of a red colour, and composed, many of them, of earth arranged in layers like the coats of an onion. The ground under and around them is especially suited for the growth of sugar, which, accordingly, is the staple product, and of which as much as 65,000 tons was raised in 1847 alone. It is grown in the valleys, which, as we have said, are all well watered, and the cultivation of it occupies fully one quarter of the surface, and employs the majority of the inhabitants. The other crops the soil yields are chiefly wheat, maize, coffee, manioc, and yams; and, wherever it is not cultivated, the ground is covered with every variety of tropical tree, united together by a jungle of gay flowered creepers and climbers. These forests abound in palms, bananas, guavas, mangoes, and bread-fruit trees; and, here and there, is a species of tree fern, with beautifully long feathered

fern-leaves growing in a mass from the top of a stem forty feet high, and depending in graceful curves to the ground. The tree in greatest repute for its timber is the ebony-tree; the heart-wood of which being hard, compacted, dark-coloured, and capable of a high polish, is extensively used for veneering, inlaid-work, and toys. As found in the Mauritius, the bark is white, the leaves large and thick, green on the upper surface, and white below, the flower smelling like cloves, the fresh wood of a fetid odour, and only the hard heart-wood black and available as ebony.

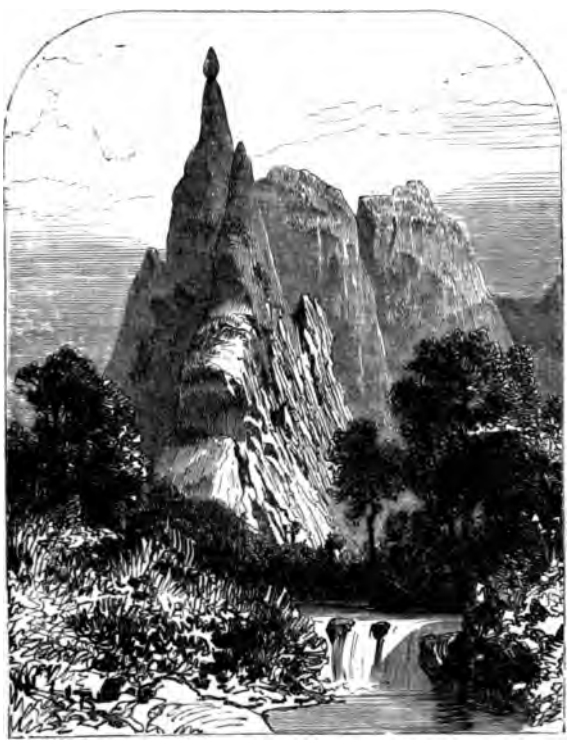
The forests, and indeed the whole island, swarm, as usual in these latitudes, with insects and reptiles; but neither here nor in Bourbon is there a venomous serpent to be found. Of the insects the musquito is the most troublesome, and, next to it, a creature called the flying-bug, which both "stinks and stings," and is a perpetual irritation in the cool of the evening. Scorpions and lizards exist in plenty, and land-crabs living in warrens and occupying holes like rabbits. In Drake's voyage, they are represented as "so large that one of them will plentifully dine four persons." Acutely sensitive to light and odour, they are said to be deaf as door-posts, and not to hear the report of a rifle, or feel the earth shake when a bullet lights among them. A lizard there is, too, of fly-catching propensity, which, being provided with feet like those of the fly it hunts, can not only climb the walls of rooms, but crawl over the ceiling as well. Innocent, very agreeable companions, their persons are held sacred in most families for the flies and insects

they abolish; only, in their eagerness to catch their prey, they sometimes, when on the ceiling, forget where they are walking, lose their footing, and fall amongst the company. There is no great variety of birds on the island; and though a few of them, like the cardinal, as he is called from the flashing scarlet he wears, are bright feathered, hardly any of them are gifted with a talent for singing. The only one that makes any respectable attempt in this way, is a bird they call the martin, who is a universal favourite, being "the life and spirit of the island, where all other birds are as good as songless," but his exuberance of spirits is often such that he will "break off with a laugh in the midst of the performance." The early Dutch settlers had at one time nearly exterminated his race, having mistaken him for an enemy who only devoured their fruit; but when they discovered, which happily they did in time, that by killing insects he saved more than he consumed, the exterminating war they had begun against him ceased, and they proceeded to treat him with the same religious regard in which, for a like reason, they hold the stork at home. Not so favourably could these settlers be made to think of another bird, called the dodo, a native of this island; for him they persecuted so relentlessly that he has not only never been seen there since, but his race has perished from the face of the earth, and all that remains of him in the museums of the world, for science to study, are a single head and two feet. Descriptions of the bird exist; and these represent him as of the most ungainly form and movement, with short scale-clad

legs, large head and bill, short, sparse-feathered wings, a curly tufted tail, and of a size a little larger than a swan. The Dutch, though they used his flesh for food, took a mortal dislike to him, calling him "Disgusting-fowl;" and as from his slow movements he was an easy prey, they never rested till they cleared the island of him, and, as we say, it happened, the world. He is understood to have belonged to the cassowary, or ostrich, class of birds, and to have served some not undivine purpose in his day and generation, which it is to be hoped other creatures remain to fulfil. Parrots there are none native to the island, but paroquets, and an insignificant kind of monkey, who has mind enough, however, to combine with his fellows in plundering incursions upon man's estate, making off with his booty by snatching it up and pitching it to an accomplice outside in waiting, who, in turn, hands it to a third, and he to a fourth, until, at length, the prize is safely lodged in some retreat accessible only to monkeyhood.

In this island there are properly only two seasons; the one when there is a constant wind from the south-east, which is cool, and injurious to vegetation and fruit exposed to it; and the other, in which it blows steadily from the north-east, when the most delicious evenings compensate for the heat by day—November, December, and January being the hottest months in the year. The island is very much encircled by coral-reefs, and being subject, as all tropical countries are, to violent storms, is safely accessible only by a rock-and-fortress-protected inlet on the north-west. This is Port Louis, which is also

the capital, and, like most other places, it retains the name given it by the French. Batteries. planted to



PETER BOTTE MOUNTAIN.

right and left, were once, if not still, strong enough to defy ships of war passing in; and the port itself, into which the pilot guides the vessel with his eye

upon the peak of Peter Botte Mountain in the rear of it, is "nestled"—an eye-witness assures us—"at the foot of an amphitheatre of rugged, oddly-shaped mountains, in the centre of which rises the 'Pouce,' or 'Thumb,' covered with wood to its very top."

The "Peter Botte," which is the beacon inwards, lies over the first range of hills to the left, and is not unworthy to rank among the wonders of the world. It is a mountain-pinnacle, which, seen from a distance, resembles, says one, a finger with a marble balanced on the tip of it; or, as others aver, the statue of a woman. At a nearer view, it is seen to be an obelisk, towering sheer up more than 300 feet from its base, and about 1800 from the plain, which, on one side, it overhangs, and surmounted by a huge irregular mass of detached rock. It owes its name to a Dutchman who, some say, succeeded in ascending it, but lost his life either at the last, or when he was descending, earning for his failure from an unsympathizing public no nobler distinction than that of "Botte" or "Silly." His fate, real or imaginary, did not, however, deter others from projecting, and even attempting, the same feat; and it was actually accomplished by a party of British officers on the 7th September 1832. This party consisted of four, and was attended by a number of sepoys and negroes, who carried for them the necessary block and tackle and provisions. The ascent was steep and toilsome from the very first, but the real difficulty lay in scaling the needle and surmounting the loose block at the top. The needle, which, at its base, on one side, rises 1800 feet sheer up from the plain

below, was ascended by a negro, who, with a cord round his waist, and using his feet monkey-wise, clambered up the knife-like edge, or ridge of it, on all fours. Attached to the end of the cord he carried was a rope, which, when he reached the neck, he hoisted and fastened, and by the aid of it the officers were, though not without difficulty, landed at his side. The detached block, still to climb, they found to be an immense mass, 35 feet in height, and projecting beyond its base many feet on every side; and the landing overhung by it to be a tolerably level ledge six feet wide, running about three-fourths round, and bounded everywhere, at the verge, by the abrupt edge of the precipice, except towards the perpendicular ridge, along which the ascent had been made. The block above, too, projected beyond the outer verge of the ledge all round, except here, and even from this point the eye as it glanced upwards could only see along its face. To adjust a ladder against this, therefore, was clearly impossible, nor could they by any projectile apparatus throw a cord over to hoist one up. It was a puzzling, seemingly insolvable problem, but sailor intrepidity and ready wit soon and successfully resolved it. Captain Lloyd, one of the party, undertook to throw a line over, if his comrades would support him by a rope round his waist, while he swung himself horizontally back with his face looking upward and his feet planted against the perpendicular rock of the needle. It was a daring project, and frightfully perilous to all concerned, but it was at once adopted, and at length crowned with complete success—not, however, till,

after repeated failures, it was all but given up, when the stone, which frequently returned, was carried over aided by a wind that chanced. This was eagerly caught, as it descended, at the opposite side, and soon the ladders were raised, and our four adventurers, led by Lloyd screeching and hallooing, stood waving wildly the Union Jack at the top. This signal was at once recognized by thousands of onlookers on the watch in the port, and responded to by a salute from a British frigate in the harbour, and the guns of a battery in one of the forts. The fearless madcaps, having got a bottle of wine, christened the peak King William's, and drunk His Majesty's health, with hands round the Jack now planted by the flag-staff in the rock, and amid "hip, hip, hurrah." Here they by-and-by dined together, and after spending upon it an evening of glorious beauty, they descended in the morning, "stiff, cold, and hungry, leaving the Union Jack well secured, flying on the summit."

Mauritius is the scene of the story of Paul and Virginia, which was written on the eve of the French Revolution, and while the island was still subject to France. Faithfully has the author, Saint Pierre, who visited the island, delineated its beauties, and many are the objects associated with his morbidly-thought, though musically-rendered, tale. Here it was, or rather amid imagination of scenes like these, that, according to Mr. Carlyle, "old France" chose to sing her "swan-song" and give up the ghost, longing for communion with Nature, and yet clinging to "diseased perfidious Art," pining for reality

CASCADE OF THE SAVANE.

and unable to enjoy it because it was not French—dying of "etiquette," and drawing tears of sympathy from all hearts. Two children, a boy and a girl, grew up from infancy together in this charming region, innocent and happy as the first pair in Eden; their fathers dead, but their mothers, who live together as sisters there, caring each for both as if they were her own. The boy, however, is of no birth, while the girl has high connections, who, when love emerges, induce her with consent of her mother to return to fortune and honour in ancestral France. She leaves her lover, vowing fidelity, and, through many temptations remaining true to her promise, is sent back. But when she returns, a storm overtakes the vessel just at the landing, and she alone of all on board is shipwrecked, choosing rather to perish than be saved at the expense of sacrificing the fine ladyism she had learned in France.

The southern part of the island is charmingly beautiful, especially the district called La Savane. It is remarkable for a cascade, which is nearly unique among waterfalls, for bursting over a precipice of upright basaltic pillars. This precipice is a thick wall of black basalt, composed of columns shaped into regular geometric prisms, as if they had been cut according to square and rule by the hand of man, and which are tightly packed together side by side like the cells of a honey-comb. The water in falling over them is dashed back from the tops of the shorter and broken columns in front, and leaps, when in flood especially, in a vapour of spray into a deep pool surrounded with water-lilies. The leaves of these lilies float on

the water without being wet, and the rain which falls upon them from the cascade collects on their surface into little dancing globules, as of mercury, while athwart their violet stems, which hang gracefully over the water, may be seen darting to and fro swarms of bright glancing, variously coloured little fishes. The environs of the fall are adorned with bananas and other tropical trees, which, along with the fresh feeling from the water, impart to the spot an air and aspect truly charming. Here the Cascade de la Savane at one season trickles gently, and at another dashes in spray, outmatched in its basaltic character only by the Cascade of Regla in the New World.

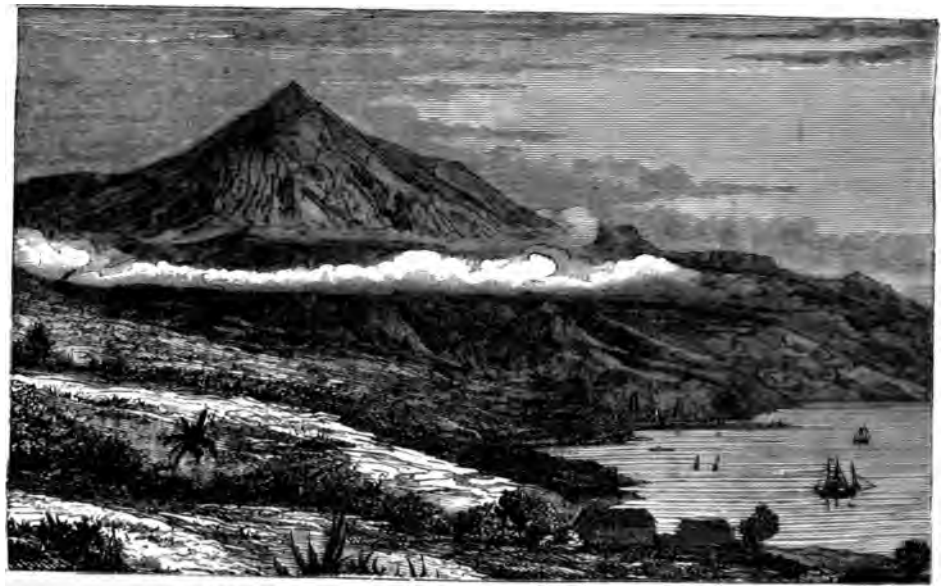
II.

The Peak of Teneriffe.

THE Canaries are a cluster of seven larger and numerous smaller islands, lying in the Atlantic, 60 miles off the coast of Africa, and about 1700 miles south-west of London. They are all of volcanic origin; that is, they consist of rock molten in, and thrust up by fire from, the deep sea-bottom. They were renowned in fable long before they were known in fact, and are thought to be the group celebrated in antiquity as the Isles of the Blessed, or the immortal abode of the heroic dead. It was fancied the hero must have his final resting-place in the region of the setting sun, and these islands, when the report of their discovery first reached Greece, were at once fixed upon as the sacred spot: and not unworthily, as it turned out, for they abound in every natural delicacy, and yield the productions of nearly every clime. Their chief exports are wine, sugar, fruits, and grains. They were originally inhabited by a race of people called Guanches, who used to go to war with each other, tribe with tribe, and sell their captives to Spanish merchants for slaves. They are now extinct as a people, having been swept away by pestilence, sold into slavery, or

merged in the Spanish race, who conquered them and seized their possessions. Mummies of them remain, and the knowledge of embalming this fact implies, proves them to have made considerable advance in civilization. They were men of great stature, and are for this reason sometimes called the Patagonians of the Old World. The Spaniards, who now occupy the islands, claimed and held them originally in virtue of a grant given by the Pope; but not without much bloodshed, as the names of places testify, were they able to make their title good. It is to be hoped they now hold them by a higher right, and that they, as well as all land-owners on the globe, realize the existence of surer claims than any based on the mere parchment grant of pope or potentate.

The canary-bird, known far and wide over the world, is a native of these islands, only his plumage is never yellow, as with us, but invariably green, with a tinge of yellow, if anywhere, along the back. They fly about wild in numerous flocks; and it is said that, in one of the islands, their eggs at a certain season are so plentiful, that you can hardly walk without treading upon and breaking them. Some of these birds have a finer, that is, a softer, more melodious and touching song than the canary as known to us, but these can by no means be tamed, "so sacred to their soul is liberty." Yellow canaries are to be seen there as well as here, but only in cages, and by importation from abroad. Here are neither parrots nor monkeys; but in the Western Islands are numerous camels, and elsewhere a species of goat superior to any found in Europe.



THE PEAK OF TENERIFFE.

The seven Canary Islands have a population of a quarter of a million, are each under a governor, and all subject to the authority of the Captain-General, who resides at Grand Canary. Of these islands, however, Teneriffe is at once the central and largest, as well as the best known and most remarkable, the chief feature of which is the Peak, and this is interesting alike to the naturalist and the navigator. It has been for centuries a beacon to the sailor, and from an imaginary line, called a meridian, which passed nearly through it from north to south, the Dutch seaman used to calculate the position of all places on the globe. It is upwards of 12,000 feet high, and may be seen at sea at a distance of 120 miles, more or less, according to the state of the atmosphere. In shape it is a cone of steep, but nearly uniform, slope, terraced somewhat as we approach the top, and terminated in a small truncated cone called the Piton, or Sugar-loaf, which in height equals nearly a twentieth part of the whole elevation, and, being covered with white pumice-stone, reflects a bright light, suggestive of snow. It looks snow-capped, therefore, at all seasons, but is so only in winter; and the whole is seen at a distance—the upper part, or the Piton, because it is brighter, and the rest of the mountain because it is darker, than the back-ground formed by the sky. When approached nearer, its sides are seen to be deeply fissured into gorges and valleys, and clothed from the base upwards with zones of vegetation, which correspond in their productions with the zones of the world as you ascend from the equator nearly to the very pole.

These zones, or belts, of vegetation, with which the mountain is found to be successively begirt, have been by Humboldt, who visited it in 1799, reduced to five, or rather six. There is, according to him, the zone of—1st, the vine; 2nd, the laurel; 3rd, the pine; 4th, the retama; 5th, the grasses; and 6th, barrenness—this last so, not because it is frigid, for it is not, but because it is without soil. The first zone, which ascends to a height of from 1300 to 1900 feet, is the best cultivated and peopled, enjoys a climate intermediate between that of Naples and the Torrid Zone, and exhibits a vegetation which in appearance resembles that of Africa. The fruits cultivated in it are dates, sugar, olives, figs, the vine, and even cinnamon and coffee. The second zone, being the region of the springs, is covered with a rich turf, always verdant and planted with every variety of tree of value for its wood, and beautiful for its majesty of form and abundant foliage. It is called the woody region, and abounds in oaks, chestnuts, olives, laurels, and myrtles, the whole carpeted or festooned with flowers. The third zone, which begins at a height of about 5600 feet, and has a breadth of above 2000 more, is entirely filled with an immense forest of pines, of which the leaves are of unusual length and stiffness, and sprout from one sheath often in twos, and even threes. Above this region the same kind of vegetation goes on for a time, but is interrupted by heaps of pumice-stone, broken lava, &c. A beautiful tufted Alpine broom is seen in all directions, and forms higher up in thickets many an oasis in an otherwise waste desert

of ashes. This, called the retama, grows to a height of 10 feet, and affords food to a race of goats native to the region. The presence of this broom characterizes the fourth zone of the mountain, while the fifth, though named of grasses, is, from the presence of naked rocks and lava, only thinly spotted with green.

Though in summer the snow completely disappears from the summit of the mountain, there is, it seems, a cavern 2000 feet from the top, whence ice and snow can be had at all seasons, and where natives, provided with mules, collect it to sell it in the towns below. It remains unmelted on account of its mass, and because the heat which converts the superficial portions into vapour, comes partly from its own substance, and keeps it cool.

The Piton, or terminal cone, which is surmounted by the crater, or cup-like hollow, as it was left by the last eruption, rises from a narrow plain or terrace, at an elevation of fully 11,000 feet from the base. It is cleft here and there with fissures, which are called nostrils of the Peak, and from which are seen issuing at intervals the vapour of pure water, a phenomenon due apparently to the evaporation of the snow accumulated within them in winter. This cone is covered all over with volcanic ashes and fragments of pumice-stone, and can be ascended only by the groove the lava left in its descent at the last eruption, ascending by which even you must hold on, as it were, with "beak and claw." The difficulty of the ascent here is enhanced by a sensible increase in the degree of slope, and, when you reach the top

you are confronted by a wall which seems to surround the crater, and bar not the entrance only, but the very view, into the interior. In this, however, when examined, is found a crack from top to bottom, and by it you can not only see into the crater, but descend within. This wall is found, when you enter, to surround the crater, and form to it an elliptically-shaped funnel, with its greater axis pointing north-west and south-east, 300 feet long, and 200 feet wide. The cup, or crater, itself is 100 feet deep; and though it, too, is covered with crevices, from which vapours issue hissing, and a clammy ooze corrosive to the clothes and shoe-soles, descent is possible to the very bottom. This may be hazarded with all safety, as no eruption has taken place from the summit for thousands of years; any manifestation of volcanic life since having appeared through the sides of the mountains low down, and the last of any note having occurred in the year 1798.

The view from the summit, owing to the narrowness of the base, and the clearness of the atmosphere, is unique at once in its range, variety, and beauty. The range of view equals in area half that of Great Britain, and takes in all the islands of the Canary group; and the transparency of the air is such, that most distant objects stand out with the most perfect distinctness of both colour and outline. As for the sky, seen especially in the zenith, such is the rarity of the air, that its azure is intenser than De Saussure observed from the summit of Mont Blanc itself.

III.

The Mammoth Cave in Kentucky.

THE Mammoth Cave is the largest known to exist in the crust of the globe, and is situated in Kentucky, U.S., 130 miles south-west of Lexington, in the latitude of Gibraltar. It is entered from the banks of the Green River, a tributary of the Ohio, and appears itself to have been excavated by some ancient river in some long by-gone age of the world. It consists of a succession of caverns of various dimensions, with intervening passages, and has been penetrated by the curious explorer to a distance of 10 miles. The country round is richly wooded and cultivated, and the fissure, 20 feet high by 30 wide, which forms the entrance to the cave, and is in the side of a limestone hill, is half concealed by festoon-work of leaves and flowers. Here there are in daily attendance a number of chartered guides, who, provided each with a number of miners' lamps, are ready to direct and show the tourist through the labyrinth; and these, till lately, at all events, used to be negroes, who, for most part, fathers of families, were able, from the profits of this occupation, at length to purchase freedom for themselves and children.

Choosing, and accompanied by, one of these guides, you enter this underground region, and, descending some sixty paces, find yourself in a lofty cavern, or rather gallery, 60 feet wide and half a mile long, which the Americans, in consequence of the millions of bats which cluster here, call, after their great ornithologist, the Hall of Audubon. This gallery is chiefly remarkable for its length, its level floor, and the saltpetre wrought out of it in the beginning of the present century. Arrived at the further end of it, you find you have been conducted by it into a spacious amphitheatre, not inaptly denominated the Rotunda, 100 feet high and 175 feet wide, and from which branch off in various directions numerous corridors. Entering by one of these, you are led down a pretty rapid slope into a chamber 300 feet in circumference, the lofty roof of which is arched like the nave of a cathedral, and supported, as it were, by stalactites resembling cathedral pillars. This cavern bears the name of the Gothic Church, which, that the resemblance might be complete, Nature has provided with stalls and even a pulpit, whence, it is said, once and again, Christian ministers have preached the gospel. These pillars, pulpit, &c., have been formed, in the course of long ages, by water dropping continually from, or rather through the roof, charged with particles of lime and flint, which, as they adhere at the top, depend like icicles, or, harden at the floor, rise into columns. Such formations, when suspended from the roof, are called stalactites, and when rising from the floor, stalagmites; and these often result in producing

forms strongly similar to those organized by living nature and elaborated by art. In this case so complete is the similarity to a Gothic church, that eyes, aided by torch-light and imagination, have discerned here an altar, a font, and candalabra, nay, even an organ flanked by draped figures in various attitudes.

The avenue called the Gothic—as being no less rich in fantastic shapes, borrowed, as it were, from the Gothic model—by which you retire from the church, conducts, through a succession of corridors, into what is called the Chamber of Ghosts. This compartment of the cave is so named because of the immense number of mummies found in it when it was first explored; the only relics, it is thought, of a tribe of Indians long since vanished from the earth. Strangely, this which had once and for centuries been a silent place of skulls, was, till lately, the most animated and best illuminated quarter of the whole cave, frequented, as it happened to be, by valetudinarians, of the consumptive type especially, from all parts, on whom the saltpetre in the atmosphere, combined with the equability of the temperature, was thought to act beneficially, and for whose accommodation here American enterprise had built and provided a number of stone huts by way of hotels. Here to this day, though the valetudinarians have left in quest of health elsewhere, it is presumed, refreshments may still be had, and newspapers in restaurants; kept, possibly, in the usual fashion, and presided over, as in negro slave-emancipation times, by the wives and daughters of the guides.

Quitting the Chamber of the Ghosts, your way for long is narrow, tortuous, and often steep. First, you descend by a series of ladders, then you cross a chasm by a wooden bridge of the most frail, rickety structure, and are soon involved in the coils of a labyrinth winding and again winding upon itself. At length the passage grows straighter indeed, but the roof lower and lower, until not even stooping will suffice, and you must go down and creep along on all fours. This passage, which some of our negro friends probably have called the Valley of Humility, terminates in a sort of balcony, to which has been given the name of the Devil's Chair. This chair is a recess cut out in the side of a perpendicular rock, and provided with a window, from which you look down into an abyss deemed by your familiar *witty people* not unworthy of the name they have given it, the Bottomless Pit. The wall in which the balcony, or chair, has been formed is one of the sides of this pit, and is doubtless the brow of the precipice over which once dashed the waters of some extinct Niagara. The abyss yawns gloomy and vacant in the lamp-light both above and below, only darkness visible all round. Bits of paper twisted and dipped in oil, are kindled by the guides, and thrown in, but they keep falling as long as they continue burning, and seem no nearer the bottom when they go out than when they were lighted. What the depth is, the negro, with his sensational tendencies, assures you is uncertain, a sounding-line of 900 feet having, to his certain knowledge, come short of the bottom; which is not so surprising, when we *hear of* a chasm

in Sweden of such depth that a stone, when cast into it, takes nearly two minutes to descend, and thus gives evidence of a space passed through equal to twice the height of the highest mountain in the globe! Of the abyss in Kentucky the negro guides used to relate each his surprising tale; and one they tell is of two fugitive slaves, who, after being tracked and hunted from corner to corner all over the cave, were at length driven into the gallery which terminates in this pit, and who, rather than fall into the hands of their pursuers, waited only till they saw themselves overtaken, and then, hand in hand, leaped wildly in, sending back, as they descended, not even the echo of an echo to announce the arrival of their unhappy carcasses at the bottom!

From the verge of this horrid gulf your guides next conduct you, by a succession of ups and downs, to what they call the Mammoth Dome. This is a cavern of immense extent, with a cupola, or dome-like roof, nearly 400 feet in height, and the vault of which is lost in so dense a darkness as to be invisible even under the light of multiplied torches. A stone of even moderate size, detached from this roof, would, you are told, quickly despatch you, if you happened to be below it, an announcement under which you feel no inclination to tarry longer, and you willingly follow your guide as he precedes you by a path which rises winding to the summit of this dome. Arrived at its lower margin, you look up, and lo, you behold a vault, dark as night, studded all over with star-like fire. This, your guide tells you, is the Star-chamber, while you, as you gaze up,

can hardly persuade yourself you are not standing under the firmament of night itself. Being incrusted all over with stalactites of, it is said, black gypsum, this dome, when illuminated by the lamps of the guides, is set a-sparkling like the sky in a night of summer. Nay, by adroit management of their lights, the guides can make them so fall upon these stalactites as to reflect for you appearances resembling dusk and daybreak in the heavens.

Passing from the star-chamber, you skirt the shores of a lake some 50 feet long and 30 feet broad, which you are gravely told is the Dead Sea; and, by-and-by, you stand arrested on the banks of a river you are assured is the Styx, which, especially when you descry the boat at its margin, reminding you of Charon, you feel half disposed to believe it is. It rolls on, at a depth of 300 feet below the earth's surface above, between banks which are 30 feet apart, in a volume of water 40 feet deep, and about 500 feet onwards dives suddenly out of sight, veiled in its going, as in its coming, like the mystery of life itself. The boat it is meant you should enter; and as you commit yourself to it, your guide, as he pushes it off and paddles away, horrifies you with sounds, which, as they come back upon you from the vaults and passages, tempt you to believe you hear groanings from the tormented in penal Tartaros. Troubled with these reflections, which the weird light on the walls, and the ghost-like shadow of your guide on the waters, caused by the light now carried by yourself, contribute to deepen, you are suddenly startled nearly out of your senses by a

THE RIVER STYX

sound beside you which, as it reverberates along the galleries, makes you apprehend something like the crack of doom itself. This is a trick of your guide, who, seeing you lost in your reflections, has, unobserved by you, slipped ashore and startled the echoes by striking his oar violently upon a wall or ledge of rock. You look round you terror-stricken, and there is Sambo grinning and laughing, as only a nigger can, over your consternation, ravished to the marrow of his bones at the success of his small hocus-pocus. After an hour's sailing on this nether river, in which, by the way, you are told anglers have caught two kinds of fishes, one with eyes but without vision, and another with no eyes at all, only marks, you disembark at length at the further end on a bank of fine sand, where you can clearly perceive traces of higher water-levels. Onwards a little further you alight upon a small sulphur-spring, and then by the Cleveland Avenue, whose walls seem wrought all over with a delicate fretwork of flowers, you are at length ushered into what, from the snowy whiteness of its walls, obtains distinction among entities as the Snow Ball-room. From this, by paths now wide, now narrow, now smooth and level, now steep and rugged, you pursue your way, and arrive at length at a range of rocks lying athwart your course, which you see must have fallen detached from the vault above; and as you ascend and descend, you are given to understand are nothing less than the Rocky Mountains. These you cross, not merely for the sake of crossing, but to see the far-famed Fairy Grotto which lies beyond. This

grotto, when you enter and inspect it, you find a fairy-realm of pillars and arches which, as the sonorous droppings all round testify, are still unfinished, and not to be seen, therefore, or criticized by fools or children, who, according to a Scotch proverb, should never see things half done.

At the further extremity of this room, as it is called, a group of stalactites may be seen, which, in their curvings and inclinations, are an exquisite imitation, as in alabaster, of an Oriental palm-tree, from the top of which the jet is still in play, under whose droppings and runnings this glittering arabesque is being formed; and this, as you behold it with still fresh wonder, your guide, to your sorrow or not, announces as the close of the entertainment. Thus far, it seems, you have penetrated to a depth of above nine miles; and your journey hither and back, you need not be astonished should it occupy ten hours;—ten hours which, whether marked with white chalk or black on the tablet of memory, are not soon to be forgotten, and likely to form a period to or from which all other events in your history may date themselves. To the last you may be uncertain whether the prominent place this visit retains in your recollection is due to the impression made upon you by the cave itself, or the gratitude you felt as you issued from it alive and scathless.

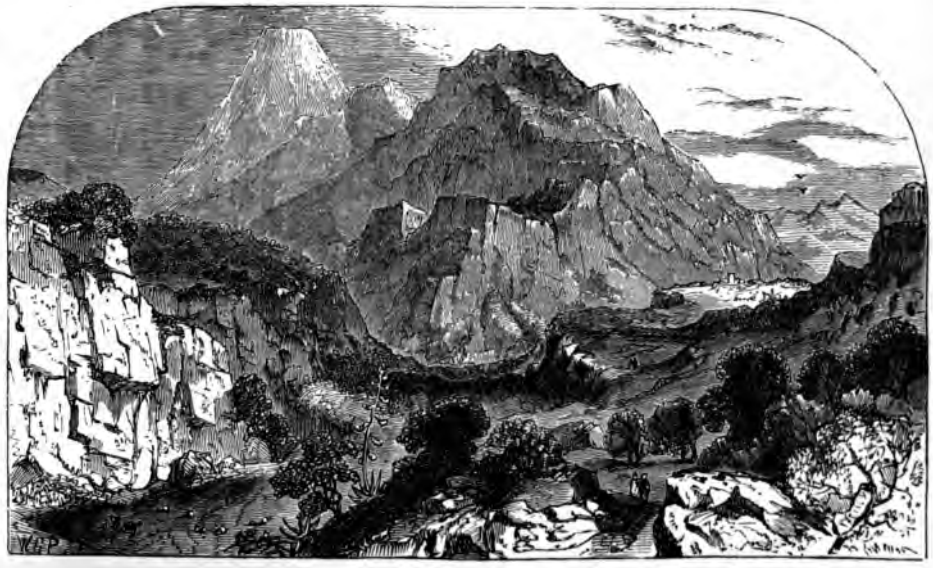
IV.

Scenes in the Andes:

CHIMBORAZO, COTOPAXI, AND NATURAL BRIDGE OF ICONONZO.

CHIMBORAZO, though not the highest mountain in the New World, as it was long thought to be, has been ascended higher up by man than any other in either hemisphere, if we except the peak of Ibi-Gamin, in the chain of the Himalaya,—Humboldt, in 1802, having attained an elevation of about 19,000 feet, and Boussingault, thirty years after, a height of 20,000 feet. This mountain is 21,420 feet, or fully four miles high, and situated not far south of the line in Ecuador, South America. It was on the 22nd of June, Humboldt, with his friend Bonpland and a number of native guides, commenced the ascent, and after halting for the night at the Indian village of Calpi, far up the sides of the mountain, he and his companions started for the summit on the morning of the 23rd. This summit is approached all round by a succession of level terraces, called Llanos, covered with vegetation, and rising, the highest of them, to an elevation greater than the peak of Teneriffe. These llanos, which are perfectly horizontal, re-

semble the bed of what had once been a lake, and forcibly recall the steppes of Central Asia, while the mean temperature is the same as that of Paris. At an elevation of about 14,000, or 15,000 feet, the vegetation ceases, and only rocks appear, rising aloft from fields or slopes of eternal snow, and resembling at times, in the distance, forests of trees, dead indeed, but still standing. Undertaken from the south-west, Humboldt found the ascent possible only along one of the ridges, owing to the depth and softness of the snow which had recently fallen on the slopes; and this, as he proceeded, became always narrower and steeper, until at length all the guides refused to advance further, and he and Bonpland were left with only one attendant to prosecute the rest of the way alone. In this they made greater progress, in spite of the mists, than they expected; but it was amid dangers which thickened at every step. The ridge, or back of the knife, as the Spaniards call it, along which they ascended, was often hardly a foot in breadth, while to the left there sloped away a field of snow at an angle of thirty degrees, coated with ice glancing dazzlingly like a mirror; and on the right, the eye looked down into an abyss 900 feet deep, into which there was the danger of falling and being empaled on rock-needles. "We proceeded," says Humboldt, "with the body inclined, however, more to the right—the danger on the left appearing greater, because there were no rocks to cling to in the event of slipping over, and there was the risk of sinking through the ice, which coated the surface, and being buried in the snow."

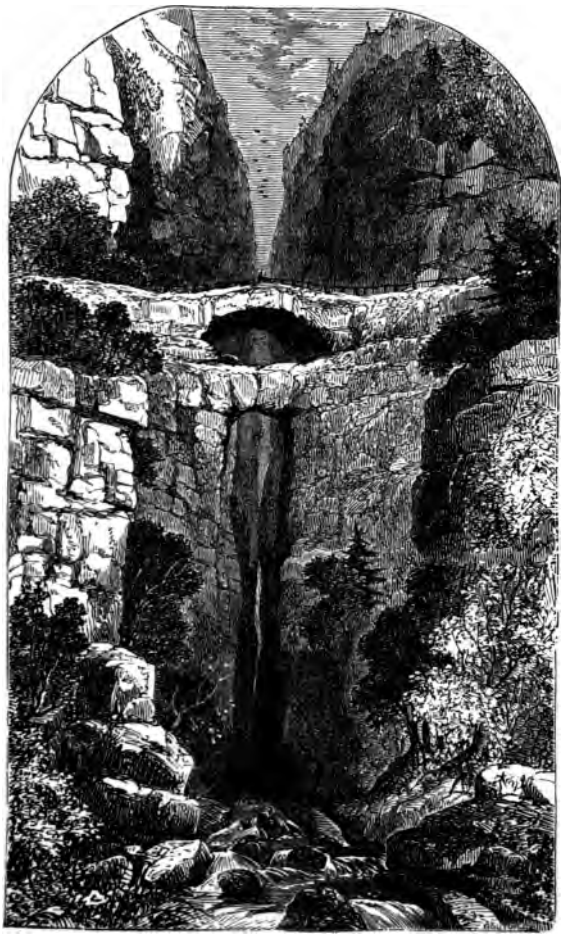


VIEW IN THE ANDES

At length the ascent became more difficult still; the rocks more crumbling, the slope so steep that it was necessary to employ hands as well as feet, and there was the risk every moment of being wounded by the sharp asperities of the rock. Nay, not unfrequently were the rocks, which they might be tempted to use for props, found, on trial, to be such as would certainly have given way had they trusted to them. Here the temperature was five or six degrees below freezing, the ground humid, and the mist obscuring. The party, too, began to experience vertigo and an inclination to vomit, and in this the native, who accompanied them, was the greatest sufferer. The eyes grew blood-shot, and the gums and lips began to swell and bleed. The same effects Saussure experienced in his ascent of Mont Blanc; but, what is curious, they began to show themselves with him at little more than half the elevation. This depends partly on the air and partly on the individual. Gay-Lussac ascended in a balloon to a greater height than any mountain-explorer, without being subjected to one half the inconveniences. And now the veil of mist, which had hitherto enveloped the party and the top of the mountain, suddenly cleared away, and the rounded, dome-like summit appeared close at hand. The way, too, began to widen, and the confidence of our travellers to increase; but before long a barrier confronted them, and this, though the summit beckoned them upward, they found it impossible to surmount. This was a crevasse that yawned athwart the ridge more than 400 feet deep and 60 feet wide. The ridge, or

rather ledge, indeed, prolonged itself beyond, but to attempt to reach by descending the chasm, appeared an enterprise too perilous, and there was nothing for it but to stop short. It was the utmost elevation yet attained on the globe by human beings, though they were still 1500 feet from the top. Here it was impossible to remain long, for the mist re-descended, and there was a good distance to retrace to find a shelter to pass the night. Snow also began to fall; but in two hours the party had got back as far as the guides and their horses which had been left below the snow-line.

Chimborazo is an extinct volcano, yet is the volcanic force not quite extinct in its depths, for though the natives pay no heed to them, earthquakes are not uncommon on its slopes and around its base. Cotopaxi, its neighbour, which Humboldt also attempted, is still in action to its very summit, and at times erupts with a noise which is heard 700 miles off, and a torrent of flame which ascends 3000 feet above its crater, and this, though the mountain itself is 2500 feet higher than Vesuvius piled on the peak of Teneriffe. The rocks and scoriæ ejected by it would, if collected from its slopes and gorges, form a mountain of imposing proportions. Its summit is a perfect cone 4000 feet high, covered all the way down with snow of a dazzling splendour, particularly at sunset, but which disappears on the eve of an eruption, and isolated from the rest of the mountains by deep ravines which defy all attempts to reach the top. This top, seen at a distance, looks a parapet of bare rock, which surrounds the crater like



NATURAL BRIDGE OF ICONONZO.

the funnel of Teneriffe; and, in this respect, Cotopaxi differs from Chimborazo, which terminates in a dome.

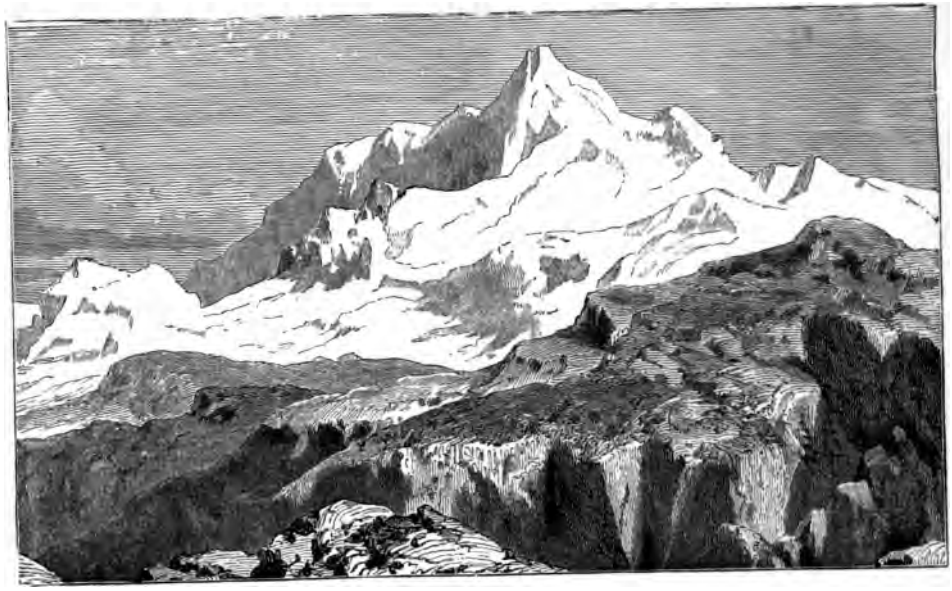
The valleys in the neighbourhood of these mountains are generally crevices, often of enormous depth, and some of them, which are narrow, are united and arched over by natural bridges formed of fallen rock. The most remarkable of these bridges are at Icononzo, south of Santa Fé, and one of them is especially remarkable for the singular forms of its rocks, "the naked tops of which," according to Humboldt, "present the most picturesque contrast with the tufts of trees and shrubs which cover the edges of the gulf." This arch is 47 feet long, 39 feet broad, and the fissure it bridges over is 318 feet deep, while the bottom of this fissure is swept by a stream that comes rushing and foaming into it after a fall in the form of a double cascade. Sixty-four feet lower down is another bridge "composed of three enormous masses of rock, which have fallen so as to support each other. In the middle of this arch is a hole through which the bottom of the cleft is seen. The torrent, viewed from this place, seemed to flow through a dark cavern, from which a doleful sound arose, emitted by the nocturnal birds that haunt the abyss, thousands of which were seen flying over the surface of the water," supposed by Humboldt, who reports this, "to be goatsuckers."

V.

Gaurisankar:

THE HIGHEST MOUNTAIN IN THE WORLD.

THIS mountain, the height of which was measured by Major Everest, after whom it is in this country usually named, is the highest on the surface of the globe, lying within the range of the Himalaya, and in the centre of Nepaul. No one has approached within many miles of even the sides of it, so impassable are the chasms which lie between; and yet its height has been accurately taken by that strange science which enables us with certainty to know the sizes and distances of the unvisited stars. Its summit is 29,002 feet, or 5½ miles above the level of the sea, the mountain next it in elevation being Dapsang in Western Thibet. Kinchinjunga, straight north of Calcutta, ranks third in the scale; but this, though 1000 feet lower than its brother-mountain in Nepaul, attains a higher level than would the highest of the Pyrenees were it piled upon the top of Mont Blanc itself. Between it and Gaurisankar, which rises west of it, there extends a panorama of mountain, gorge, and glacier, which, with the snow-peaks crowning it in *the rear, is*, for grandeur and sublimity of effect,



GAURISANKAR.

unapproached by any spectacle in the world. These peaks, with the two giant ones which bound them to east and west, may be seen from the south on a clear day at a distance of 300 miles; and a little below Bhagulpoor, on the Ganges, is the confluence of a river, called the Coosy, whose waters are fed by the glaciers which lie between. "At the foot of this colossal wall of mountain, which these peaks dominate, and which seems the barrier of a world, stretches, parallel with its length, a long, black, fantastically-traced border." This is called the Terai, and is a zone of forests which extends along the foot of the mountains from one extremity of India to the other, from the Sutledge to Bramapootra. The soil of this forest-region is neither alluvial, as on the side of the plains, nor of rock, such as the mountains, but consists generally of a series of layers of sand, gravel, and pebbles rounded in water; the whole deposited in beds by the twofold action of the currents of the mountains and the tides of the ocean, in those ancient epochs when the latter dashed upon their bases with its waves, and abraded them with its ice-fields. The region itself is the haunt of wild and savage animals; but by the middle of April, such is the miasma engendered within it, that they all abandon it, and do not return again till the month of October. The tigers and elephants withdraw to the mountains; the monkeys, antelopes, and wild boars make for the plains; and those who, on military or other enterprises, are at this season obliged to traverse it, report that the frightful desolation to which the malaria has reduced it is such

that its silence is unbroken by the cry or flutter of even a single bird. It is for this reason the region is called the Terai,—a Persian word, which signifies a *vapour*, or *misty exhalation.*

"The Terai may be regarded as the ditch, or moat, of the rampart formed by the Himalaya, of which the scarp, with a mean height of 20,000 feet, bears bastions that are more than 25,000 feet high, and presents to the enemy from the south a continuous wall without apparent breaches, and of 1200 miles in length." There is only one pass practicable through this immense natural barrier; and this is the gorge through which the Sutledge, towards the western extremity of it, finds its way from the northern sides of the chain to the southern.

Above 200 miles north-west from the source of the Sutledge, but on the southern side of the range, rises the Jumna, the principal feeder of the Ganges. This river is remarkable for being the only river of any note in India, which, throughout its course, is purely Indian; all the others flowing round the east or west of the chain from the north. Its source is nearly 11,000 feet high, and after a course of 680 miles it joins the Ganges at Allahabad. Its waters, being drained off for canals and irrigation, are shallow and navigable only to rafts. It is, however, an important frontier-river against invasion by the north-west; and on it, accordingly, are built both Agra and Delhi, the seats successively of the Mogul power in India.

SOURCE OF THE JUMNA.

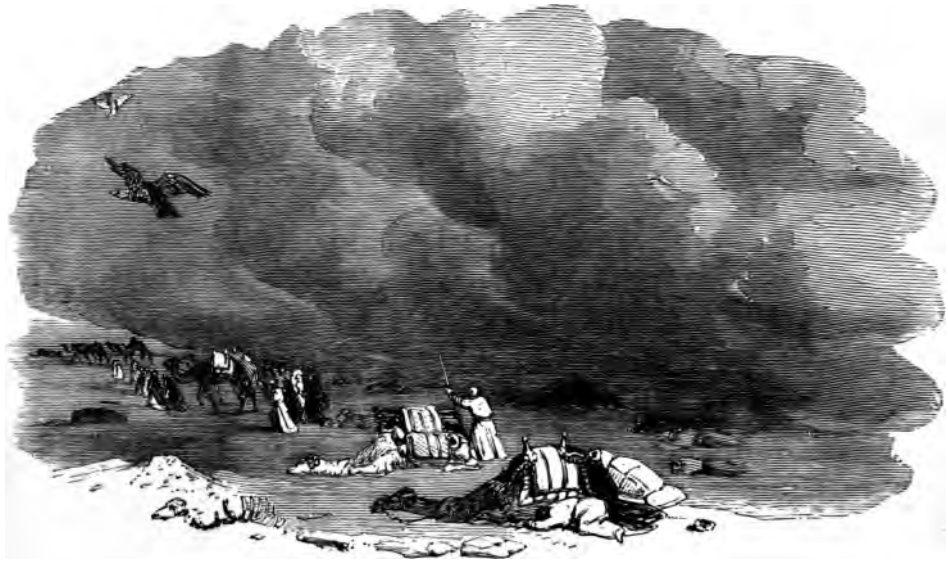
VI.

Desert of Sahara.

SAHARA, in Africa, is deemed the largest desert on the face of the earth, being one-half the size of Europe, and yet it constitutes only part of a larger which extends, with interruptions, eastward through central Asia, and forms a belt equal to one-third the circumference of the globe. The aridity of soil which characterizes this belt of land is caused by the dryness of the air which sweeps its surface, and this again is due to the air-currents which blow across it traversing immediately beforehand no great expanse of water. The African portion of this desert lies about half within, and half beyond, the Torrid Zone; and it is by nearly a third of its area west of the meridian of London. In its greatest length it stretches east and west, and is twice as long as it is broad, being twenty-five hundred miles by, on the average, twelve hundred. It is not, as was for long thought, a low level waste of mere drifting sand, but an immense table-land of, in the main, from 1000 to 1500 feet in height, with here and there, particularly in the east and centre, minor plateaus, and even mountains of from 4000 to 5000 feet high. Large tracts and dunes of

sand, indeed, abound, but naked, rocky surfaces also extend on all hands. Most of its area is composed of firm soil, of solid masses of indurated sand, of sandstone and granite, which occasionally rise into peaks and ridges, and are cleft into deep wild ravines, the whole of even, sombre aspect at times, and entirely without vegetation. Examined geologically, it would doubtless exhibit the usual rock-varieties, but the only mineral it has yet been made to yield to man's necessities is rock-salt, which in one part exists so plentifully as to afford materials for building houses. Proof there is that it was once, and at no distant date geologically, the bed of a sea in communication with the Mediterranean, and this the abundance of salt, shells, and other marine remains establishes beyond all cavil.

The sand with which the desert abounds has, under the action of the sun's heat, and the impulse of the winds, been extensively divided into a subtle powder, which, when the hurricane rages, swells, moves, rolls, and labours like the waves of the sea, and sometimes rises into hills that have been sounded and found to be 300 feet deep. These fine particles have as much mobility among themselves as those of water, and obey in a mass the same laws. Sahara resembles the ocean, too, in its vastness and in the sense of silence and solitude, with which, when calm, it impresses the voyager. Like the ocean, it has its green islands, its wave-stricken shores and dangers. At night, its surging masses, which by day heave in alternate lines of dark shade and dazzling sunshine, are seen to emit a phosphorescence



SIMOOM IN THE DESERT.

resembling that of the waves of the Equatorial ocean. In keeping with this observed analogy it is, that the modern Arab and the fairy legend agree in calling the camel, on which from time immemorial this sand-sea has been traversed by man, "the ship of the desert." Perched on the back of this invaluable and hardy creature, the traveller, like the sailor, has no other method of determining his bearings and directing his course, but his mariner's compass and knowledge of the stars. Sahara, in brief, has its pilots, pirates, and perils, the same as the liquid desert we name the ocean.

Sahara has, for ages, been crossed along different lines of route by companies of men, mounted on camels, called caravans, and these, as they happen to assemble at the place of rendezvous, have been known to number as many camels as two thousand. These caravans, however picturesque at starting, at halting, or on route, are often exposed to perils to which even sailors are strangers. Except meeting, mayhap, now and then another company, they will travel on for days without descrying a single living creature, tree, grass-blade, or even lichen—without being able to trace the least vestige of anything with the principle within it of organic life,—nothing discoverable anywhere to the oppressed spirit but a weary waste of rock and sand. The heat, too, caused by the direct and reflected rays of a burning sun, shaded by not even a single cloud, communicates to the soil and atmosphere an absolutely scorching quality, so that you breathe an air sometimes at 120°, and pass over a surface heated to 150°. At

night, such is the radiation of heat from the soil into unclouded space, that water, owing to the quantity of heat thus abstracted, will freeze before morning, and so small a quantity of vapour is there in the atmosphere, that the rising sun is preceded by no twilight, but announces itself at once on the horizon as a ball of fire. But of all the perils to which the

CARAVAN IN THE DESERT.

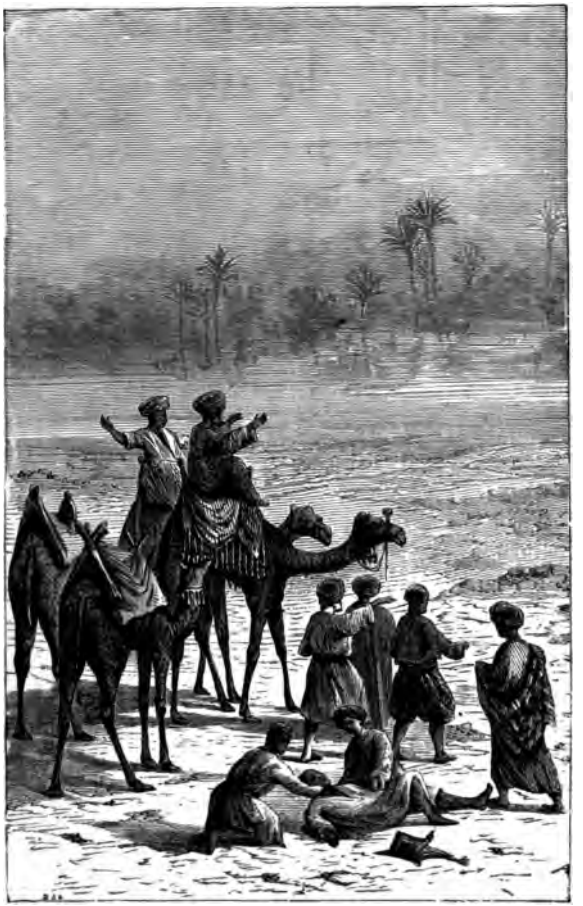
traveller in this desert is exposed, the greatest and most dreadful are those which accompany the simoom. This is a hurricane, which after a brief array of doomsday-like warnings, bursts over its expanse like a blast from a seven-fold heated furnace, parching up the very blood in the body, and choking and suffocating with burning dust the mouths and nostrils of men and beasts. This last is so penetrating that,

in spite of every precaution, it will, in many cases, stop up the air-passage, arrest respiration, and, as in drowning, suspend life. And even when it is not thus immediately fatal, the rapid evaporation the

HALT OF A CARAVAN IN THE DESERT.

heat induces, dries the skin and engenders inflammation, fever, and a maddening thirst. In 1805, the simoom destroyed thus a caravan of two thousand persons, and nearly as many camels, and everywhere

in these deserts the traveller comes upon memorials of its desolating ravages, in the whitened skeletons of men and camels. In this region there is no dew, and seldom, except on the mountains, any rain, not oftener than once in ten, or even twenty years, and then it seems "it never rains, but it pours." The rains, which fall on the mountainous districts, which they do in tropical showers from time to time for some months every year, either immediately evaporate again, or percolate the soil. What the soil, or rather sand, absorbs in this way, gives rise in all probability to the underground waters, which the Arabs, from immemorial times, in many quarters, come upon by digging to various depths below; and the presumed universal presence of which here, has led them to designate Sahara by a name signifying the "Island that floats on a subterranean sea." These subsoil-waters, so to speak, here and there, all over the desert, but principally towards the east and north, rise of themselves to the surface and appear as springs. The spots they irrigate are called Wadies, or Oases, and these are gardens for fertility, and paradises for beauty, yield dates, fruits in every variety, and grain, and support a population in many cases of several thousands. The springs by which the verdure of these spots subsists, and is nourished, are guarded by the natives as true holy wells, the filling, or the drying up, of which would convert it at once into a portion of the general surrounding waste. Nor is this contingency at all uncommon, as the scattered ruins of important villages too plainly testify. The Oasis of Tébaïch perished thus not



THE MIRAGE IN THE DESERT.

many years ago, and to-day the stems of the palm-trees may be seen standing out of the sand, which buries it, like the masts of the ships of some stranded fleet. The date-tree is the life of these green spots in the wilderness, and the date, like the palm-tree, must, as the Arabs say, have "its feet in the water and its head in the fire." Without the palm-trees there had been no oases; without the oases no world for man to occupy; and so the natives say, that God made the palm-tree when he made man.

Not the least striking phenomenon witnessed by the wayfarer in these solitudes is that known in optics as the *mirage*. Of the effects of this the most wonderful accounts are given, and the deception it produces has misled the inexperienced and the unwary from the earliest ages. Often, as the caravan journeys over the desert—all the company, it may be, foredone with fatigue, maddened with thirst, and nearly blinded with the light reflected from the burning sand—will they descry on the verge of the horizon what seems a glistening as of water and a waving of palm-trees. Nay, in these circumstances, it is said, the eye will discern in the distance now smiling landscapes, and now verdant islands, here rivers flowing between fertile banks, and there cities with their mosques; while again, at other times, is clearly visible a caravan halting under the date-clusters, with the camels browsing on the herbage, or quenching their thirst by the palm-tree wells. Deceived by visions of this nature, and goaded by thirst, the traveller will oftentimes turn aside from the route in quest of water, following to his ruin the specious

but seductive illusion, as it recedes before him beckoning him on and on. Much of exaggeration as there may be in the accounts of these illusions, there can be no doubt of their reality; for, strange as they are, they are easily explained, and are a necessary result of the heat communicated by the sun to the soil of the desert. This heat is so intense at times as to render the layer of air which rests immediately upon the soil considerably rarer than the air above, which latter we may conceive of as an ocean of water resting upon the former as on an undulating shallow atmosphere of air. Where these meet at their surfaces, there is a mirror created, in which objects are reflected just as they are, for example, in a lake where the air is above and the water below. The images in the case here are reflections, more or less distorted, of some real objects at no great distance beyond, or, as for most part happens, some particular aspect of the sky. In this last instance, the colour of the sky will reflect itself in this mirror with more or less of undulation, according to the undulation created in the lower stratum of air. Such is the mirage, and the images it creates owe their fantastic forms to the combined action of the agitation in the atmosphere of the desert and the feverish excitement in the brain of the thirsty traveller as he traverses its wastes.

VII.

Iceland and its Wonders.

ICELAND is an island one-fifth larger than Ireland, lying five hundred miles north-west of Scotland, and overlapping by its northern margin the Arctic Zone. It has been known, by name at least, to the rest of Europe for a thousand years, having been discovered in 860, and first colonized from Scandinavia in 874. By way of it, too, Europeans, a hundred and twenty years later, arrived on the shores of Greenland, and erelong America itself, five hundred years before its discovery to the rest of the world by Christopher Columbus in 1492. The first to approach it was a Norse pirate, or viking, who, in 860, drifted near it, and, after sighting it, called it Snowland, and returned home. It was next visited by another Norseman, who, by way of taking formal possession, spent a season on it, sailed round it, and baptized it, after himself, *Gardar's* Holm. Floki, the third adventurer who left the shores of Europe to explore it, took with him three ravens for pilots, having at starting offered a solemn sacrifice to Thor, and was guided thither by the third raven, which, when let off, flew northward. Floki of the Ravens, as he is therefore

called, stayed three years upon the island, and, after surveying its shores and river-banks, gave it the name it has ever since retained in history. He returned to Norway, representing its grass as dropping butter and its seas as swarming with fish; and the report he brought was tempting enough to induce a number of his countrymen, who were oppressed at home, to choose it for their place of exile and free abode. These exiles, who sailed under Ingolf from Drontheim in open boats with a few sheep and cattle, landed and settled in Reykiavik, in the Fiord, on the south-west, which has ever since remained the capital—directed thither, as they construed, by the gods. They had carried with them the sacred pillars of the home they left in Norway, and having cast them into the sea, they took this spot, into which they drifted, for the one in which the gods had willed they should settle and dwell.

Men they were, it seems, of the best and bravest, who sought not gain, but freedom, and would rather die than be driven to do what, in their thinkings, misbeseemed a man. Such were the original settlers in Iceland, and of such stuff for three hundred years did their descendants prove themselves to be.

The land these Norsemen, thus inspired and guided, chose as their future home, for themselves and children, is one of the most remarkable on the face of the earth, and the least attractive of all the regions upon it selected and occupied as a dwelling-place by man. A strange land "burst up," as the geologists say, "by fire from the bottom of the sea;" largest surface and mass of territory in the world

created solely by submarine volcanic agency; "a wild land of barrenness and lava, swallowed up many months of every year in black tempests; towering

BASALTIC DYKES.

up there, stern and grim, in the North Ocean; with its snow-jökuls, roaring geysers, sulphur-pools, and horrid volcanic chasms, like the waste chaotic battle-field of Frost and Fire." It burst up from the

bowels of the earth, thousands of years ago, a mass of lava, or molten earth-rock, and, cooling suddenly, cracked into hard irregular blocks of all shapes and sizes, through which, in after-years, poured tumbling other masses, until at length these, by ever and anon erupting at the summit, swelled into mountains, which, as they cooled, became gradually covered to a peak with ice and snow. Nor did its connection with the central fire cease with the epoch of its formation; it subsists to this hour, particularly along a belt of land of very varying breadth which stretches across the island from north-east to south-west, and is full of openings which, by their eruptions, testify to the continued action, at its very surface even, of the fire-agency which, at the first, projected it from the sea-depths. Risings and fallings there still are of lands at the sea-coast; steamings everywhere of vapour impregnated with sulphur and other minerals; caldrons of all sizes undulating here and there with water at all temperatures up to the boiling point; large basins with nether-communications, ejecting ever and anon with thunder noises, here high steaming columns of mineralized boiling water, and there dirty sputterings of mingled sulphur and mud; and to crown all, sleeping under the ice-mountains, are volcanoes which at any moment may open, scattering desolation over the island and darkening the sky to our own shores. Well called by Thomas Carlyle, "The waste chaotic battle-field of Frost and Fire." Nowhere else on the earth's surface are these two elements in such close proximity, or is their ancient feud kept up so fiercely to this day.

This island, like Norway and the other islands of the North Ocean, is deeply indented with long narrow inlets called fiords; and these, in the case of Iceland, result from the lava having been thrown up from the central mass in divergent rays, the extremities of which still exhibit volcanic upheavals. These rays or promontories, which divide the fiords, are generally mere naked heaps of lava-blocks contorted into all shapes, and piled up in the wildest way, haunted, it may be, by sea-fowl, but without trace of tree or herb, grass or even moss-bed. Only as you retire up the fiords themselves do you come upon any vestige of vegetation, and this oftentimes of so dark a green that it seems as if it had been fished up from the bottom of the sea. On the banks of the rivers, which are numerous, and rise in the jökuls or glaciers which also abound, at a distance, in one case, of two hundred miles from the sea, there are, though nowhere else, grass meadows to be found, but the grass is generally of a coarse quality, and often mown and gathered under two or three feet of water. Grass of this nature, and moss, are to be met with a certain way up the valleys; but, though they speak of forests, nowhere are there any trees, these being only bushes never exceeding nine feet, and in most cases four or five in height. Grain there is none, nor possibility of any, for want of fit soil and season, and therefore no agriculture; while such pastures as there are yield a forage barely sufficient for the cattle kept by the natives. The ponies, which abound, running wild, and are the surest-footed animals of the kind—such that Lord Dufferin assures us specimens are to be had

which can, without a slip, go down-stairs backwards —are left through the winter to forage for themselves, and are usually so emaciated in spring that it is June before they can be fed up into faculty for anything. It is a country of bald rock, volcanic wreck, and ice, for most part, on which man, isolated from Europe, could not survive a generation. Fish, fowl, and flesh occasionally, are at the option of the natives, but no grain, except a form of rye or grass, which, though the seeds of it can be ground into meal for making cakes or pottage, grows too scantily to supply the lack of the ordinary cereals, or grain-crops. As it is, there are families which, by exchange even, can hardly procure wheaten bread enough for their households, to supply a meal once a week. In some cases, so hard bestead are they for fuel in winter, that they have to warm their huts by burning carcasses of birds which have been laid up for food. Sea-birds abound, such as eider-ducks and land-fowl, in plentiful variety. Fish of the cod species are numerous on the shores; so much so, that the French Government employs annually 7000 seamen to catch them, and a promontory in the south-west is, from the profit this fishing in its neighbourhood yields the natives, called the "gold-bringing region." Salmon, too, there are in plenty up the rivers, of a size and quality equal to the best, and these the natives catch and sell to dealers for, it is said, some 3d. per pound. A trout there is, moreover, which, report says, is equalled by no other fish in the streams or waters. These the natives partly subsist upon, and partly, and indeed mainly, barter

away for foreign necessaries which the ships bring with them from Europe. And if we except the sulphur, which is abundant, and we may say inexhaustible, there is little Iceland can offer in exchange for the commodities of other climates which does not feed on its scanty grass-bords, or swarm on the banks of its seas and rivers. The produce which these yield, too, varies greatly from year to year; for such a region of storms and rains is it, and so invested at times, even in the summer season, along its northern shores with a broad margin of ice from the Polar Seas, that not only is the herbage often insufficient for the cattle, but there is little to reward the toil of the fisher on its streams and shores.

The interior of Iceland is for most part uninhabitable, and, though it has been surveyed by the Danish Government with a minuteness of detail without a parallel in the survey of any other country, there are immense areas in it which have never been penetrated, and only two routes, not roads, by which it is possible to traverse the island from north to south. It is in the interior a mere waste of lava, or basaltic masses, piled up, as we have said, in many quarters into mountains, some of which are above 6000 feet high. In the south-east of the island there exists a region of 3000 square miles in extent, of an elevation exceeding 3000 feet, and covered from year's end to year's end throughout with snow-enveloped glacier-like fields and mountains of ice. The prominent peaks are all volcanoes mostly gone extinct, it is thought—called jökuls; yet it is only little more than eighty years since one of these,

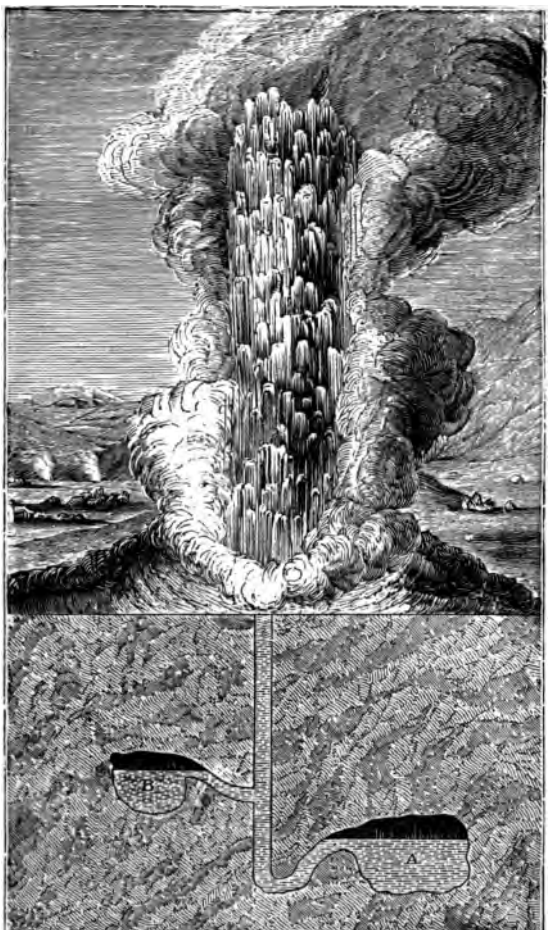
Skaptar Jökul, announced itself as still active, with a vehemence of energy equal to anything on record in the history of volcanic life. In 1783 this eruption occurred, darkening the heavens for hundreds of miles round with clouds of vapour and ashes, and causing the island to quake violently from end to end. Towards the end of May threatenings appeared in the shape of a light blue fog which rested over it; with the beginning of June the mountain began to tremble; on the 8th, it poured forth dense smoke-masses, which, spreading, overhung the island like a pall; and on the 12th, after days of fire-breathing and panic, which affected the rivers and scared away the fish from the shores, it commenced pouring forth a stream of lava, which, as it sought and followed the bed of a broad lake, or river, sent the water away hissing and screaming before it into clouds of vapour; and, after two days, lay supine, a solid lava-river of miles in length, in some places 600 feet deep and 200 broad. At the time of the eruption there burst up (from the sea-bottom, 200 miles off) an island, with three volcanoes on the breast of it, all in a state of violent action, and ejecting volumes of pumice-stone in such quantities as to block up the very seas. This island, though formally taken possession of by the Crown of Denmark, to which Iceland is now subject, disappeared in a year after, sinking slowly under the water again, and now figures on charts as a reef of rocks, whose points are from five to thirty fathoms down from the sea-level.

But the volcano on which the reputation of Iceland, as a land of fire, mainly depends, is Hecla;

the eruptions of which, as being of late the most frequent, happen to have been most recorded. These eruptions have occurred at intervals of from five to seventy years, and frequently display an energy worthy of the earliest volcanic ages. In 1766, the eruption was such that the rocks discharged from it flew over it like bees, one of which, composed of pumice-stone, and six feet in circumference, was projected to a distance of twenty miles; the ground within a circuit of a hundred and twenty miles was covered with dust, on the average four feet deep; white paper could not be distinguished from black a hundred and forty miles away; and even the people of Orkney were surprised with showers of dust-flakes, which they called black snow.

The most remarkable of Icelandic phenomena, however, are the mud-caldrons and geysers, to which we may add the world-historical Valley of Thing-valla. Of the mud-caldrons, which occur only in the sulphur districts, by far the most worthy of notice is that of Krabla in the north; and it indeed is second in interest as a physical fact to the Great Geyser itself. This, it appears, is a lake, 300 feet in circumference, of boiling mud, impregnated and steaming with sulphur and sulphur gases, and abounding in jets, of which the central one starts up every five or six minutes to a height of from twelve to thirty feet, and in a column of about nine feet in diameter! In the south, these mud-sulphur pools, though not so large, are more numerous and about as noisy, emitting a stench which is intolerable, and showering a sulphur-powder all round.

Of the more purely water eruptions, which are all at the boiling-point, the most striking are the two Geysers, *i.e.*, gushers, or ragers, which are little more than a hundred yards apart, and issue from a surface one half mile across each way, which is covered with caldrons of all sizes, active and extinct. They may be seen from the summit of Hecla to the north-west, and lie some two days' ride to the north-east from Reikiavik, the capital. The smaller of the two is called the Strokr, or Churn, and shows an opening flush with the general surface round, of six feet in diameter, and which, as you look down into it, appears to grow gradually and uniformly narrower as it descends, exhibiting at a depth of twenty feet an agitation and hissing as of seething water. This geyser will sometimes continue in action for half an hour, bursting up fitfully to an elevation, at the most, of sixty feet, and discharging in all directions vast clouds of steam. By simply tumbling into it a quantity of turf, however, sufficient to choke it, it can be provoked into an eruption at any time, and it will continue discharging itself till every particle of the injected matter is cleared out of its throat. Nay, if after injection of the turf, which must in this case be administered in a gentle dose, you throw in a leg of mutton, properly protected, in forty minutes Strokr returns it to you cooked to perfection. The Great Geyser, on the other hand, which, owing to its construction, cannot be subjected to a similar treatment, presents at the surface, when idle, a circular pool filling a saucer-like basin 70 feet across and 4 feet deep, supported upon a mound 15 feet



THE GREAT GEYSER.

high, and from the centre of which stretches downwards to a depth of 83 feet, a shaft 8 feet wide, and uniformly so from top to bottom. The basin is incrusted all over with layers of mineral matter deposited by the water, and in appearance resembles the outside of the shell of the oyster. The water contained in it is always hot, and at the very edge sometimes 180°, since, even when there is no eruption, water at the boiling temperature is always ascending the shaft in the centre, and the surplus escaping over the sides. This geyser was, by all accounts, at one period more energetic and demonstrative in its action than it is now, going off explosively twice or thrice a-day, and springing aloft to a height of 300 feet. Now-a-days its violence is greatly moderated, but even yet its eruptions are on a scale of surprising vastness and "not only worth seeing, but worth going to see." They are now seldom, if ever, witnessed more than once in forty-eight hours, or known to rise above 100 feet. It grumbles a good deal before the fit comes on in right earnest; but, when it does, it heralds the act with an explosion enough in these expectant solitudes to awaken the seven sleepers. The eruption lasts from twenty to thirty minutes, the waters shooting upwards jet after jet, in columns twenty-five feet in circumference, with fearful rapidity, and, as they do so, shaking the ground around with their thunderings, and darkening the air with dense masses of fleecy cloud,—of all which we must seek the cause in the still immediate nearness to the surface, in that part of the world, of its central fires. These fires engender in the bosom of

the geyser a vapour of steam, which, as it collects, must every now and then seek liberation by forcible expulsion of the water. A reference to the woodcut on p. 79 will show at a glance the structure and working of these geysers. A, B, are cavities in the subjacent rock, always more or less replenished with water. In these the water, as it boils, creates a steam, which, as it expands, both expels the water and escapes explosively along with it.

Of all the wonders in the island not the least remarkable, in a physical point of view, and by far the most interesting, humanly speaking, is the Thing-valla Valley, lying midway between the capital and the geysers, seven miles long and from three to five wide, and in a remote antiquity formed singularly by the lava-crust composing its surface cracking at its margin and sinking to a level of 80 feet lower than the surrounding country. To the south of it, and in a line with the length of the valley, there extends a lake, the largest in Iceland, and thirty miles in circumference, with two crater-topped islands in the centre, caused by the lava which forms its bed having sunk lower still than it did in the valley, bounded all round by rugged lava-cliffs, and terminated at its southern extremity by a district abounding in cones, from which are seen continually curling upwards spiracles of sulphur-vapour. The valley itself is sprinkled over with a feeble vegetation, mostly of a birch brushwood, and thickly interspersed with cracks or fissures, some of which are sixty feet deep. The lava which composes its surface having not only sunk, but shrunken,

THING-VALLA.

the valley is bounded, on the east and west sides especially, all the way by more or less continuous deep rents or ravines. These are called Gjas, and are, the western one particularly, nearly 100 feet deep—the cliff formed by the lava which remains at the primitive level being in some parts 180 feet in height. But more interesting by far than the valley itself, is a small green spot within it of an irregular oval shape, 200 feet long by 50 wide, rising into a conical elevation at its northern extremity, and guarded by deep impassable volcanic chasms on all sides, except the south, where a natural causeway connects it with the surrounding valley.

Here, under the naked canopy of heaven, for 900 years annually assembled the Parliament of Iceland; for the first 300 of which they met, speaking and resolving their wisest and bravest by the help and counsel of the gods alone. Spot sacred to liberty all over the world, where men, thinking their gravest and deepest, dared to speak, act, and enforce it in the name of Heaven itself. They called their parliament Althing, that is, assembly of all, where each one who had anything to say may speak it, and make sure of an earnest response to it from all hearts—would find all prepared to draw sword for it, and shed in behalf of it their best blood. And the valley ennobled by the Al*thing* was called *Thing*-valla, valley of speaking, where the speaker, if sincere, is listened to, and his word endorsed by all free men. In the spirit of it, a model parliament of men to the end of time!

VIII.

Remarkable Basaltic Masses.

BASALT is a species of trap, or erupted rock, found in widely separated regions of the world, and distinguished for the tendency it has to form itself into columnar masses. The pillars of which it is composed are perfectly straight, with three, four, five, up to nine, and even twelve, equal sides, each of the utmost symmetry of shape, and fitting by its surfaces and angles exactly into the others. It is formed of the same ingredients as greenstone—that is, hornblende and feldspar, with a small quantity of iron—only the particles or grains composing it are smaller, hold more firmly together, and yield a rock of a denser and harder texture. In colour it is of a dark gray, next to black, and the columns it forms are commonly articulated, or jointed, at nearly equal intervals along their length, by in some cases a ball-and-socket joint, while they fit so closely by their faces to one another that it is often impossible to insert the point of a penknife between them. These columns form themselves at right angles to the greater extent of the mass they originate in—that is, are perpendicular or sloping when this mass is in a horizontal or sloping *bed;* and

horizontal, when, as in Iceland (see page 71), it rises in a perpendicular wall. The minute granulation and hard compactness of the rock is due to the suddenness with which it cooled when it was at the first ejected molten from the bowels of the earth, and the

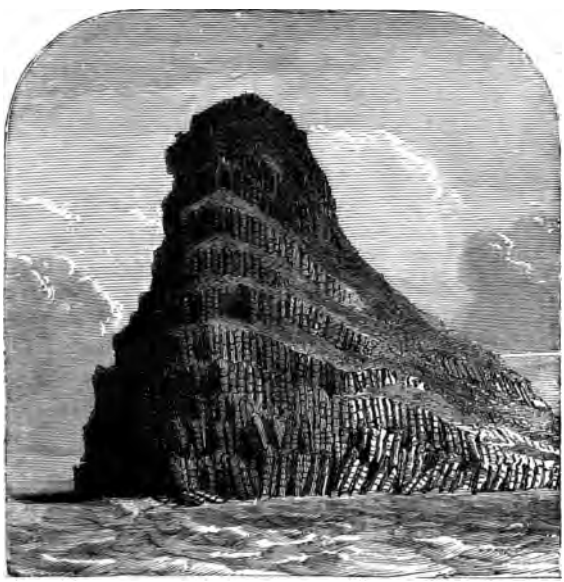
CASCADE OF REGLA.

columnar form is thought to have been caused by the escape of vapour from its mass, which made it crack into pillars, that afterwards, as in starch manufacture, shrunk slightly when cooling.

The most remarkable examples of columnar basalt

are the Cascade de la Savane in the Mauritius, the Cascade of Regla in the New World, the Cyclopean Island on the coast of Sicily, the Giant's Causeway in the north of Ireland, and especially Fingal's Cave in the west of Scotland. The basalt at Regla rises in perpendicular cliff-like colonnades, the front pillars of which have in some cases fallen away by the joints near the top, and their places been supplied by fragments of others in the rear, that have been pushed over and lie nearly horizontal. Its grace of form, and soft rich beauty of environment, go to make it one of the cascades of the world, and an expressive symbol of the great Nature of which it forms a part, where "Beauty alternates with Grandeur, and Peace establishes herself in the bosom of Strength." The Cyclopean Island, which is a singular succession of columnar basaltic masses, superimposed upon each other terrace, or rather trap, wise, belongs to a region that from of old has figured in the human imagination as the fire-centre of the universe. Here it was that strange race the Cyclops, offspring of heaven and earth, with their one eye in the centre of the forehead, and preternatural strength, in beautiful subordination to the world-system, forged thunderbolts for Jupiter, and panoplies for the immortal gods. These were the servants of Vulcan, the fire-god, and here it was they under him were fabled to produce fire-work worthy of heaven itself. Anything which only a fire-power could produce was ascribed to their agency, and hence a large irregular pile of uncemented shapen, or unshapen, rock-masses has been called a Cyclopean wall. Not unfitly,

therefore, is the towering basaltic island near Sicily called Cyclopean, as, whatever we may think of the walls so-called, there can be no possible doubt of its being the work of the fire-demons, whom the ancients, seeing the single flash dart from the brow



THE CYCLOPEAN ISLAND.

of the dark thunder-cloud, figured in their fancies as a set of enormous giants, each with a single eye.

But of all the basaltic pillars in the world, the most perfectly symmetrical and complete every way

are understood to be those of the Giant's Causeway and Fingal's Cave. The Giant's Causeway, which consists of thousands of these pillars, projects by three piers or moles, of unequal length, from the north coast of Antrim into the Irish Channel, and is said, in legend, to be the commencement of an abortive effort on the part of a race of giants to make for themselves a pile of easy stepping-stones to the shores of Scotland. The largest of these piers runs nearly a quarter of a mile into the sea, and forms by the tops of the columns a sort of uneven causeway. These pillars are close compacted together, chiefly six-sided, and composed of parts which fit into one another, the upper one into a hollow in the upper surface of the one below. Fingal's Cave, though discovered less than a century ago by Sir Joseph Banks, is now known, by faithful portraiture, at any rate, to nearly all the world. This cave opens ocean-ward, hollowed by sea, wind, and fire tempests, out of the side of a cliff of dark basalt 112 feet high, and forming the south-west side of Staffa, which is composed throughout of more or less vertical columns of this rock, resting on a bed of tufa, and surmounted by an irregular mixture of rude masses of rock, covered, for most part, with a rich and verdant sward. The cave itself is 33 feet wide at the entrance, 59 feet high to the point of the arch at full tide, contains throughout about 24 feet of water, while the recess inwards measures 288 feet along the floor and 212 along the roof. It resembles the aisle of a cathedral, floored by the sea, flanked by pillars, and crowned with a Gothic arch. A grander, more imposing, more im-

pressive pile, by all accounts, exists not among the boasted architectures of the world. Nor is Fingal's the only cave which opens under the basaltic cliffs of Staffa. On the eastern shore there is another called the Clam-shell Cave, 130 feet long, 17 feet wide, and 30 feet high; which, contracting as it retires inward, shows on one side the columns bent in a way resembling the inside timbers of a ship, and on the other the ends of others fallen horizontal and looking like the surface of a honey-comb. And not only are these cliffs pierced with caves, but the pillars which compose them have, on the east side especially, toppled over, fractured by the joints, and left fragments standing above water and below, which in extent and picturesqueness more than rival the Giant's Causeway itself.

IX.

Mont Blanc:

THE HIGHEST MOUNTAIN IN THE ALPS.

MONT BLANC, though not the central, is the loftiest mountain of the Alps, and rises higher than any other in Europe, if we except Elburz, in the Caucasus, which surpasses it by nearly 3000 feet. Though little more than half the height of Gaurisankar, in the chain of the Himalaya, its elevation is more than three times greater than that of any mountain in Scotland, being 15,744 feet above the level of the sea. It is situated thirty-seven miles south of the eastern extremity of the Lake of Geneva, in the department of Haute-Savoy, France, bordering upon Switzerland on the north, and Italy on the south-east; and it extends, in a north-easterly direction, at the western termination of the Pennine chain, which stretches east. The Great St. Bernard, Monts Cervin and Rosa, which belong to the same chain, lie at intervals straight east of it; while another chain, called the western, extends straight south of it, all the way to the Gulf of Genoa, at Nice. Seen from the Valley of Chamouni, which lies parallel with it on the west side, Mont Blanc

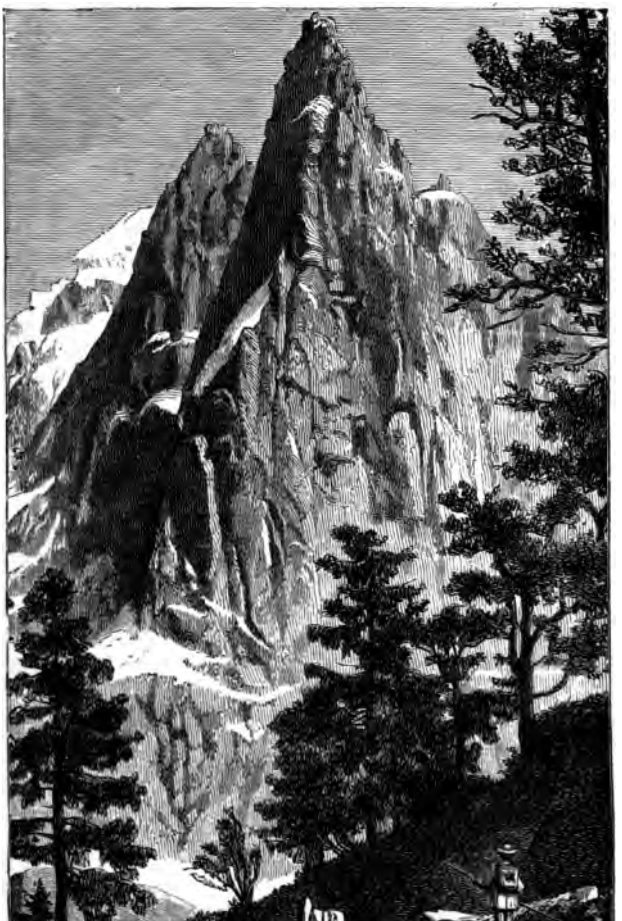
exhibits three principal peaks, capped with eternal snow; and the deep valleys which furrow this side are filled with sixteen glaciers, whose waters, as they melt, go, by means of the Arve, to swell the Rhone. The glaciers on the eastern, or Italian side, though not so famous, are more numerous, amounting to twenty, and they send their waters, by the Dora Baltea, into the Po. Of the sixteen on the west side of the mountain, seven are visible from the Valley of Chamouni alone; which valley, though at an elevation of above 3000 feet, is a paradise for fresh purity of atmosphere, gardenlike beauty, pretty hamlets, and sublimity of scene. Viewed from it, the glacier which first strikes the eye is called Des Boissons; and this, like many others, descends far into the region of cultivation, and is fringed on both sides, along part of its course, by forests of pine, which it overtops, and with which the dazzling brightness of its white presents to the eye a startling contrast. But of these seven glaciers, and indeed of the whole, by far the most remarkable is the Mer de Glace—*i.e.*, sea of ice—which terminates two miles above Chamouni, and which, coming down from its valley-top far up the mountains, covers an area of eighteen square miles. In order to see this glacier in its all solitary vastness, it is necessary, after crossing the Valley of Chamouni, near its top to the right, to ascend 3000 or 4000 feet higher up; and here you find yourself, on a sudden, skirting the top of a precipice on your left, from the giddy height of which, as you cast your eye down, you discern its waste expanse

spread out below you, and overhung by frowning masses of mountain, terrible at once for their size, steepness, and sterility. The surface of the glacier, as seen from this height, resembles a sea which has been suddenly frozen, not while the storm is raging, but just when it has spent itself; and the waves, though still high, are no longer sharp-ridged at the top, but rounded. These waves run parallel to the sides of the glacier, while across their length are seen crevasses, or long, wide fissures, of a dark blue colour, contrasting strikingly with the surface, which is white. When you descend to the glacier itself, what from above seemed waves become mountains, and the trough of them valleys, with lakes and streams in them; which last, as they flow on, fall into the crevasses, run below, and issue at its lower extremity as the source of the river Aveyron. Of these glaciers, there are about four hundred in the Alps alone, some of which are twenty miles long, and, at certain points, two or three miles wide, and as much as 600 feet of perpendicular depth. They are, to speak generally, ice-rivers of extremely sluggish movement, which fill the valleys that deeply furrow the sides of Alpine mountains—*i.e.*, mountains whose tops are always capped with snow. They are fed exclusively by avalanches, or vast snow slips, which descend at their upper extremity from above the snow line, or line above which the snow on the mountain never melts. This snow mass—which, when it descends, filling the upper section of the glacier, is of a perfectly white colour, and called *névé*—is composed of very minute particles, mixed

with air; but as the surface melts under the sun's heat in summer, the water percolates the mass, expels the air from the interstices, and, by freezing round the snow particles, enlarges them into grains, which, uniting at the sides, go to form the solid ice-mass of which the body of the glacier below consists. This ice-mass, formed wholly from the *névé*—which again, as we say, is composed of snow from above the snow line—has, from the manner of its formation, a granular texture, is gritty-surfaced, clear internally, but not transparent. It moves forward—partly in virtue of the pressure of the *névé* accumulating at the top, and partly in virtue of the inclination of its bed—very much like a viscous substance of the nature of tar or treacle, the rate of motion being greater at the top than the bottom, in the centre than at the margin, and greatest of all at the convex side of a winding. When the course is straight, the motion at the centre does not, even in the Mer de Glace, exceed four or five feet a-day, while at the sides it is not more than twice as many inches. A glacier is liable to crack here and there, from top to bottom, into wide fissures, called crevasses, which are sometimes parallel with its sides, and sometimes transverse; parallel if the bed happens to widen, and transverse when it increases in slope—the result in both cases being due to the strain, or what is called the force of tension, which, of course, is greatest near the top. The water formed by the melting of the ice or snow on the surface in summer pours itself, as we have seen in the Mer de Glace, down these crevasses, flows in an ever-increasing

stream below the glacier, and issues from an arch of ice at its lower extremity, to form or feed some far wandering river. The surface of the glacier is sometimes smooth, sometimes undulating, and sometimes broken into irregular masses. It is commonly bordered throughout its extent with fragments of rock, which have descended upon it from the sides of the mountain, and are borne down with it to lie in a heap at its extremity. These masses are called moraines: lateral, when they lie along the edges; terminal, at the extremity; and medial, when, as often happens, two or more glaciers unite higher up into one. These glaciers descend frequently far into the region of cultivation, verging even on fields waving at the season with yellow corn. They sometimes dominate the pines that skirt them, as in the case of the Glacier des Boissons; and, farther up, are themselves dominated by towering, tapering peaks of rock, the more elongated of which are called Needles. Such, for instance, are the Aiguille du Dru and the Aiguille Verte, as seen in our illustrations.

The highest summit of Mont Blanc is a narrow, nearly horizontal ridge, extending almost due east and west, 150 feet long and 48 feet wide, very steep on its north side, and sloping away at its extremities by an angle of about 30 degrees. This ridge, from its shape, is called La Bosse du Dromedaire—*i.e.*, the Hunch of the Dromedary; and this name, in turn, gives a fair idea of its shape. Though this ridge, owing to the distance from which it could be seen, had been regarded for long previously as the summit of the Alpine region, no one dared even to think of



NEEDLES OF MONT BLANC OVERLOOKING THE MER DE GLACE.

scaling it, till a Frenchman appeared, named De Saussure, who was so possessed with the idea, that he seemed sent into the world to give it birth and see it realized. For twenty-six years did this dream haunt and even trouble him, by night as well as by day; but it was not till the end of this period he saw it executed, and the honour of achieving it carried off by another—a simple Alpine peasant, named Jacques Balmat, in the year 1786. It was not until the end of the season following he himself ascended; and this, as it happened, for the last as well as the first time. His object was purely scientific; and, this attained, he cared not to repeat the experiment. He was accompanied by fourteen guides, who carried his apparatus, and assisted him in his observations. These, though finished in four hours and a half, were, owing to the rarity of the air principally, and the consequent difficulty of breathing, not executed without impediments, but they established results which attracted, and for a time engrossed, the attention of scientific people all over Europe; and these it may not be unprofitable once more to summarize and repeat.

1. The first result affected the height of the mountain; and this he estimated at about 15,000 feet. He determined this by the mercury in the barometer, which was known to fall so much for so many 100 feet of ascent; and as he found it fall from 32 inches to nearly 16 inches, he, by calculation afterwards, arrived at the elevation given. 2. While the thermometer in the shade was at 32 degrees, or the freezing point, exposing it to the sun

—such was the rarity of the air—raised it only a degree and a half higher. 3. There was, he found, six times less humidity, or quantity of watery vapour, in the atmosphere here, than was ascertained to be in it at the time near Geneva; and this fact he connected with the intense thirst he and his party suffered on the summit. 4. Owing to the extreme rarity and transparency of the air, the azure colour of the sky was intense, to a degree seen on no lower altitude. Its depth, indeed, was such as to terrify some of the guides on the way up—it seemed, and they thought it, the dread opening into another world. The degree of intensity Saussure was able to test by the help of slips of paper, sixteen in number, of all shades of blue, from the lightest to the darkest, which, with a wise precaution, he for that very purpose carried along with him; and the result of the comparison was, that while at the bottom of the mountain the sky-blue was at the sixth shade from the darkest, it was only one remove from it at the top. Indeed, so dark is the sky vault as seen from this altitude, that it is said, with the due quantity of shade, the stars can be seen glimmering out in broad daylight. 5. It was with extreme difficulty fuel could be got to burn and water to boil; and when the fire was kindled, it was found that the water, which at the foot of the mountain would have boiled in twelve minutes, took nearly thirty here. Indeed, no fire, or even light, would burn, unless fed by an artificial current of air, created by fanning, or blowing, or some apparatus to produce a draft. This also was an effect of the air's rarity. 6. So

rare, or thin, was the air at this elevation, that it required two inspirations for one which sufficed at the foot of the mountain, and the breathing was accordingly twice as rapid. The necessity for this double rate resulted from the fact, that a given space—a gallon, for instance—contained at this level only half the quantity of air demanded by the system, and provided within the limits in which nature ordained us to live. 7. The rate of the pulse, too, like the breathing, was nearly doubled, and the action of the heart, like that of the lungs, was at double quick time. In one of the party, its beats rose from 60 per minute to 112; in another, from 72 to 100; and in a third, from 49 to 98. Hence fever, as well as thirst, resulted. 8. All sounds were extremely feeble; and this was due to the absence of all echo, as well as the thinness of the air. The report of a pistol which was fired, for example, did not exceed that of an insignificant cracker. 9. No one experienced any appetite for food or stimulant, only water; but for this the craving was both incessant and keen. 10. No animal, vegetable, or rock even, was visible for several hundred feet below the summit, only two solitary butterflies; and these fluttered about with a distractedness of movement which argued too painfully they had wandered out of their element, and were not at home. It is all snow or ice for 400 feet from the summit, not a spot of earth or scrap of lichen to be met with.—Such are some of the results of Saussure's observations; and they are not an unworthy reward of the zeal he showed in the prosecution of the enterprise, and of

the labour and difficulty he experienced in carrying it out. This ascent was effected on the 2d of August 1787, the greater part of it having been accomplished the day before; and the inconvenience experienced in the course of it was due almost exclusively to the rarity of the air.

It was in the year 1760 that De Saussure—a native of Geneva, and then a young man of twenty—conceived the idea he afterwards accomplished; but though he offered a reward to any mountaineer who would find out the route, or even explore it, it was not till 1775—fifteen years later—that anything like an attempt was made. It was by four natives of the valley it was first undertaken; but the rarefaction of the air and the blinding whiteness of the snow was such as to compel them, before achieving anything, to give it up. Eight years after this it was before the attempt was repeated; and it, too, was abandoned, because one of the party became ominously infected with an irresistible inclination to sleep. "The next time I renew the enterprise," said one of them, when he returned, "I shall, with a parasol and eau de Cologne, be provided against all contingencies." In 1785 Saussure himself made his first effort; but he, too, though he ascended upwards of 11,000 feet, was, from the lateness of the season, arrested and turned back by the snow. On the 6th of July 1786, six men from Chamouni met by appointment on the Dome du Goûter; and a seventh along with them—Jacques Balmat—who they were all unwilling should join them, and share in the surely expected honour and reward. All of

them, however, went on for a time together, and only returned to the valley when they found that the ridge between the dome they met on and the summit they arrived at, besides becoming steeper and steeper, so narrowed itself that they must go astride of it to ascend it, while the precipice to right and left was several thousand feet of nearly perpendicular depth. Only Jacques Balmat insisted on prosecuting the dangerous feat; but, when he, too, having satisfied himself of its impracticability, abandoned it, and returning along the ridge, still astride, and with back foremost, found that his companions had not only relinquished the attempt, but left without him,—being stung by the affront, he at once determined not to follow them, but to spend the night alone upon the mountain, and next day either discover the true route to the summit or perish in the attempt. He descended a little way accordingly, squatted under a rock which projected only partly over him, and here passed the night without wrapper of any kind, though the temperature was below freezing. Next day, therefore, with the dawn, he started on his explorations, and finished them before mid-day, redescending with the programme of the route carefully, conclusively, and, once for all, sketched and mapped out in his head,—only the severity of the cold, and weakness from want of food, compelling him to retire, after merely scanning the way, without traversing it. On his return, he slept without interruption for forty-eight hours. When he awoke, he found he was nearly blind; and at length he began to be afflicted with a pain in the

eyes, of such acuteness that it was feared it would result in the loss of his sight. From this misfortune, however, he was delivered by the healing skill of a Dr. Paccard; to whom out of gratitude he revealed

ASCENDING MONT BLANC.

his secret, and offered by way of recompense a share in the honour of accomplishing the first ascent to the summit of the mountain. This the doctor at once accepted; and the two set out alone on the 8th

of August of the same year, after previously putting two of the Chamouni people in their confidence; and these were, on the following day, to summon the villagers to be on the outlook, with such telescopes as they possessed, to witness the feat. This they accomplished as they expected; and though they stayed only half an hour on the summit, all Chamouni was witness, at any rate, to the feat being done. When the two returned, Dr. Paccard was nearly blind, and J. Balmat was swollen all over the body, and especially about the lips and eyes. As soon, however, as he partially recovered—which he did in about four days—he hastened to Geneva, and unfolded his success to M. de Saussure; who next year, following in his footsteps, not only successfully accomplished the ascent, but, with science to help him, took notes, and printed them for the benefit of the world. With the exception of one undertaken in the year 1844, his was the first and the last scientific ascent of any consequence; nor was there any great need, for the purposes of really human science, to attempt another. Those who have succeeded him—and they have been many—have done so more to experience and produce sensations, than to advance any interest worth the pains.

One other scientific expedition was attempted on the 18th of August 1820; but this, before it came to anything, proved fatal, ending in a catastrophe which is not forgotten in the Chamouni Valley to this day. The principal in this ascent was Dr. Hamel, a Russian *savant;* and he, as it chanced,

was accompanied by two Englishmen and twelve guides. After spending, as usual, the night previous to the ascent at a station well up the mountain, called the Grands Mulets, and being obliged, on account of a violent storm, to remain through a second, the most would, with the second morning, which was still threatening, have at once returned to the valley, had not the doctor proved resolute, and, sending for more provisions, given orders they should remain till the weather cleared. At eight o'clock, accordingly, when the weather at length brightened, the doctor instantly required the company to strike their encampment and proceed. The guides, knowing the dangers, at first rebelled, and peremptorily refused. One of these, however—and he of the unfortunates who perished—taking the doctor's orders for the decree of fate, burst into tears, threw his arms round a companion, and exclaimed, "I am a lost man!" One of the Englishmen took the side of the guides; but when, upon his remonstrating, the doctor stamped his foot, and, looking him in the face, called him "coward," he, without saying a word, turned round, got himself ready, and stepped onwards with the rest of the party in the rear. Everything went on without accident, or even slip, during the best of weather, till they reached the plateau, at the base of the cap of the mountain. "Never," as Hamel himself writes, "did ascent to this point succeed better, the guides themselves being witnesses; never with more speed and fewer difficulties. The snow which had latterly fallen had the very depth and consistency best suited

for walking over it. All were in the highest of spirits, and full of hope, despite the rarity of the air, already considerable, and which was such that my pulse made 128 beats per minute, and the thirst I felt was both keen and constant. Our guides called for breakfast before proceeding further; for, said they, 'higher up one's appetite is gone.' Here, accordingly, a cloth was spread out upon the snow, which served at once for chair and table. Each seated himself, and ate with relish to his heart's content. I got all ready for the observations I intended to make on the summit. I even wrote two notes, announcing our arrival at the top, leaving only a blank for the hour. These I intended to attach to a pigeon I carried with me, and which I meant to let off there, to see how he would fly in so rare an atmosphere, and whether he would find his mate at Sallanches. I carried a bottle of wine also, to be drunk to the memory of Saussure. At nine o'clock precisely we resumed our ascent, with the summit in our eye, and seeming close above us. 'Would you be tempted to descend for £1000?' said the one Englishman to the other. 'Not,' answered he, 'for any bribe you could offer.' Such was the enthusiasm of the moment in all hearts!"

Thus animated, the company proceeded, and commenced ascending the last slope which leads to the summit, and is called the Cap of Mont Blanc, but at the foot of which yawned an immense crevasse, 150 feet deep. They ascended this slope obliquely, in single file, according to an order agreed upon, and were all in route, each following steadily in the

track of the other over the snow, every foot sure, and every heart hopeful and light; but as they advanced, it happened that the track they made cut off from the snow above it the snow below, which, having recently fallen, still lay loose upon the surface immediately under it, and, being unattached, therefore instantly gave way, sliding down, and carrying, as with the force of an avalanche, every soul along with it. Three of the guides were precipitated into the crevasse at the bottom; two others, being projected with greater force, cleared it, and were pitched into a smaller one beyond, one of them up to the neck in a gulf of snow; while the rest, including Dr. Hamel and his two companions, were, strange to say, of a sudden arrested and caught suspended, on the very edge of the abyss;—the whole having descended rolling and tumbling helplessly down 300 feet of slope. The two who had cleared the crevasse lay for a while unconscious; but recovering at length, soon the one extricated the other, and both stood, for a time, silently regarding each other with a look which seemed to say, "And are we two, then, the only survivors?" In a little, however, the rest, who had, being intercepted, stopped short on the brink, having, by means of hatchets, with which they cut a footing in the ice, and mutual help, succeeded in extricating themselves from their perilous position, appeared calling to them from a height beyond. The whole assembled, and it was soon found that there were three missing; and their names were P. Carrier, P. Balmat, and A. Teiraz. Dr. Hamel was pained and sorrow-stricken to the

very heart; while, as for the two Englishmen, they cast themselves upon the snow like men distracted, and vowed they would not quit the spot till they found their innocent companions, dead or alive. They accordingly, with the doctor and the rest, descended to the lower margin of the crevasse, and even entered it; but though they called and sounded, with the utmost personal risk, in all directions, no answer was given, and no trace of any one was found. The search was therefore given up, and all returned to the valley, each with his gloomy version of the disaster, and all persuaded that their unfortunate fellow-adventurers lay at the bottom of the crevasse, buried under above 100 feet of snow. The two Englishmen contributed liberally to succour the poor families of the deceased; but nothing could comfort the mother of Balmat. The poor old woman, after weeping her eyes nearly blind, sank to bed broken-hearted, and in three short days thereafter expired. Such price, and far greater, from the beginning of the world, and all over it, is there tragically to pay, till the human kindred learn what are the possibilities and impossibilities of life.

X.

Remarkable Scenes in Spitzbergen.

SPITZBERGEN forms a cluster of islands which lie nearly due north from the North Cape, and are at their northern extremity 2000 miles from London, and rather more than 600 miles from the Pole. They are composed of primitive rock, covered with sharp-ridged and many-peaked mountains, and indented all round with deep bays or fiords, which, with the valleys at their head, are more or less completely occupied by enormous glaciers. They form the most northern land yet discovered upon the globe; and, with the exception of Captain Parry in 1827, no navigator is known to have even sailed beyond them. Even he, though he ventured farther, with only boats and sledges, had to retire after he had ascended only 100 miles farther north, having found that he was being carried southwards by the ice-floes at a greater rate than he was advancing up.

Spitzbergen was discovered by a Dutch sailor in 1596, and was subsequently visited by Hudson, among others, in pursuance of a project, then popular, of approaching the east by the North Pole. It was not an unfrequent resort for whalers after this,

of whose visits traces are still visible in the coffined dead they left unburied behind them; but, ever since the fisheries to the east of Greenland have been abandoned for those in Baffin's Bay and Davis' Straits, Spitzbergen, as being off the route, has been rarely trodden by the foot, and hardly so much as seen by the eye, of the sailor. Since then the few who have visited it have done so for purposes of science or adventure; and of these the most distinguished are Dr. Scoresby and Lord Dufferin.

The latter visited it in the August of 1856, but could not, for fear of being locked in by the ice, remain longer than five days, having arrived at one A.M. of the 6th, and departed at three P.M. of the 11th. He sailed in a schooner called the *Foam*, manned and equipped for the occasion, and approached the island from the south, through fogs and seas of floating ice, by, after sighting it, coasting the ice-barrier to south of it westward, then turning north, and finally coming down upon it from the north-west. He took a western course to find a northern opening through this barrier, because he calculated he would be aided by the Gulf Stream, which, consisting of a river of heated water from the tropics, was known to flow north to west, and not to east, of the island. Seen at a distance for the first time to the north-east, by a sudden clearing up of the atmosphere, it seemed a forest of peaks glittering "gem-like," and this view justified at once the name it went under—Spitzbergen; that is, mountain-land of peaks. Approached nearer, it unfolded into sharp-ridged and needle-peaked ranges of hills of "gneiss and mica

slate" terminating sea-ward, and including valleys covered throughout with immense fields of ice, which extend into, and end precipitously in, the sea.

The bay into which the *Foam* steered, and where she for the five days of her stay there lay at anchor, is called the English Bay, and is understood to be one of only two inlets in which vessels at that season might be reckoned safe against being blocked up for the winter by the drifting ice. It is a "silent haven" and "completely land-locked," being defended as it opens westward by the foreland of an island which stretches opposite it north and south. As the ship on this occasion dropped anchor in it, all seemed still and solitary as an abode of death. There was no sound or sign of life, or living thing, in the air above, on the land adjoining, or even in the water round, except it were the far-off booming from time to time of what it seems was the plunging of large ice-masses from the brow of the ice-cliffs into the silent sea. The sun even hung over the horizon to northward "muffled" in a death-like mist, and shedding on the scene a weird light, in keeping with the general ghastliness. Mere sea, naked rocks, and expanses of ice, occupied the whole landscape. The bay itself is nearly filled by a glacier, which is thought to extend inland above 30 miles, and the portion not so filled is formed on its east side by the sea-ward cliff of this glacier, 120 feet high, and by two sharp-ridged ranges which bound it—the one to north and the other to south—and jut farther into the sea, six or eight miles apart. This glacier is not the largest in the island, which is full of them; for there are others

ENGLISH BAY, SPITZBERGEN.

said to be 50 miles long, 10 miles broad, and 500 feet in height, where they beetle over the water, but all of them, as is common, seem to topple, and as if, with the slightest agitation, they would precipitate their whole mass downward into the sea. Such was the bay in which Lord Dufferin and his company moored their vessel for the five days they spent in Spitzbergen. Soon after the ship was brought to anchor in this haven, all on board were, from sheer exhaustion, buried in a slumber nearly as profound as that which reigned in Nature round them. The ice-falls from the brows of the cliffs which terminate the glaciers, as they tumbled over into the deep sea overhung by them, alone disturbed the death-like silence, and the only variation in the sound which broke upon the ear of the sleepers was due to the nearer or remoter distance of the falling masses. These masses were of all sizes, and Dr. Scoresby bears witness to having seen one descend a height of 400 feet into the water "as large as a cathedral!" When they have fallen, they float away, covering the sea in these parts in all directions; and, being fresh, when they melt, they cause the water of the Polar regions to be less brackish than that of more southern latitudes.

As the morning advanced, the crew awoke from slumber, and, after breakfast, lowered the boat and pulled for the shore, to see what was to be seen, take photographs, and stalk deer. They landed on the north or left-hand side of the bay, as the only vegetation within ken appeared in that quarter, and this turned out to be a belt of black moss, half a mile in width. Here they soon assured themselves of the

presence of the animal they had come in quest of, for they saw in several parts the marks of his hoofs; but though they scanned the horizon all round with telescopes, they could nowhere see a horn, or, indeed, any other creature, winged or wingless, at which to aim a shot. With the thermometer below freezing, they proceeded to explore northwards, and found the shores in that direction bestrewed all over with logs of driftwood, and here and there, alas! too, with planks of ships, and even bones of animals, borne thither evidently from other latitudes by the Gulf Stream,—the last apparently on icebergs which had been wrecked there. But what surprised them most was the discovery of an open coffin surmounted by a wooden cross, in which there lay extended the skeleton of a Danish seaman, who, as an inscription testified, had been left there by his comrades 100 years before. This coffin could not, it seems, have been buried underground, as, the soil, such as it is, being always frozen there at two inches from the surface, it is impossible to dig a grave. Other sailors who visited this region have, it is said, fallen upon the bodies of men that had died in these latitudes 250 years before, but which, having been deposited there, had become and remained so incrusted with ice, and been thereby so preserved from corruption, that their features could be completely discerned by pouring upon their faces boiling water.

No trace of vegetation did our adventurers find except the black moss already mentioned, and this, they noted, never grew beyond twenty feet above the sea-level. Though of sailor race and habits, none of

them appears to have attempted either the ridges or peaks of the mountains. To have reached Spitzbergen itself, was feat enough without attempting more; and there, where they could safely foot it, the practical sense within them appears to have told them they had reached a limit, by transcending which they could experience and know little more. Many who had already made the attempt had lost their lives in making it; and Dr. Scoresby, who by miracle, as it were, succeeded, had reported nothing to tempt Lord Dufferin to repeat the experiment. "Bay to north and south of you, like the one you anchor in, filled with glaciers of larger dimensions and still more sea-invading; sea of glass to westward; mountains with innumerable peaks to east, far as the eye reaches; cloudless canopy of azure overhead; the whole lit up by the glory of a blazing sun; sublimity of the spectacle enhanced by the perilous situation of the beholder, as he straddles on a ridge too narrow for human foot-sole." Such was what Dr. Scoresby witnessed; and this spectacle was one our heroes had no ambition to observe again. From a less dangerous elevation, the whole as it lay around with its needles of stone, it was privilege and honour enough to them to have seen, looking up to it, and they had no very ardent wish to command it all by looking down.

The sun, which never set while they stayed on the island, they report as being brighter at midnight than at noon, and they were successful in photographing here and there an object by its midnight light. The frost at night was so intense as to mantle the

bay all over with a thin coating of ice one-eighth of an inch in thickness, which looked like oil, and would rise and fall with the undulation of the water without breaking. In winter the cold in these regions must be something frightful, when in summer the thermometer descends so low, and the mists, as well as seas, are daily frozen. Wintering on the island has, indeed, been attempted, but with fatal issues for most part, unless with infinite precautions,—the demon to guard against being cold, not scurvy, and those who have perished under it, having, from the contortions visible, died in agony. "No description," says Lord Dufferin, "can give an adequate idea of the intense rigour of a six month's winter in this part of the world. Stones crack with the noise of thunder; *in a crowded hut* the breath of its occupants will fall in flakes of snow; wine and spirits turn to ice; the snow burns like caustic; if iron touches the flesh it brings the skin away with it; the soles of your stockings may be burnt off your feet before you feel the slightest warmth from the fire; linen taken out of boiling water, instantly stiffens to the consistency of a wooden board; and heated stones will not prevent the sheets of the bed from freezing. If these are the effects of the climate within an air-tight, fire-warmed, crowded hut, what must they be among the dark, storm-lashed mountain-peaks outside?"

Of animals his lordship did not see many, and he and his companions appear to have shot nearly all they saw,—one or two eider-ducks, as many ice-birds, sixteen ptarmigan, and one bear. With another creature the waters round swarmed in plenty, but

it wore such a look of rationality and wise, human gravity, that our Englishmen, with their perennial reverence for "the heavenly in man," dared not touch it. This, it need not be mentioned, was the intelligent, gentle-hearted, and docile seal. "The ice-bird is the most graceful winged creature," says his lordship, "I have ever seen, with immensely long pinions, and plumage of spotless white." The eider duck is seen throughout the year on the northern shores of Scotland, and known in the winter months to frequent even the southern shores of England. It is valued chiefly for the down, which it plucks from its breast and spreads over its eggs when hatching; and collecting it from the nests at this season, or plucking it from the animal itself when dead, is the profitable occupation of many in the lower latitudes of these northern regions. The ptarmigan, the only other bird Lord Dufferin's people met with in Spitzbergen, is a small creature of the grouse species which has a curious affinity for spots of the same colour as its own body, by alighting upon which it becomes, as if by magic, all at once invisible. The first bird of this species, shot by these adventurers, was so small that the hole made in it by the rifle-bullet which killed it was as large as its own body! As for Bruin, the killing of him was quite a sensation, and Lord Dufferin himself had no merit in even assisting at the operation, for he was sighted and done for by the crew of the vessel while his lordship was at a distance on land shooting ptarmigan. At first, when he heard the firing, he dreaded a mutiny of his men on board the ship, but,

as he hurried off from his shooting in the direction of the vessel, he was met by his servant, a man of melancholic temper, whom he had left near the shore taking photographs, who, as he now breasted the hill in the utmost excitement, and when he thought himself within earshot, stopped dead short, and making a speaking trumpet with his hands, shrieked, "If you please, my lord, there's a b-e-a-a-a-ar." His lordship instantly cocked his rifle, expecting to see the animal at his servant's heels, and hoping to roll him over should he appear in sight; but "what was my disappointment," he adds, "when, on looking towards the schooner, my eye caught sight of our three boats fastened in a row, and towing behind them a floating object, which my glass only too surely resolved the next minute into the dead bear." The skipper, it seems, noticed it when a full mile to westward making for the shore, and instantly gave the alarm to all on board; but it had to approach nearer before they could decide whether it was a bird, a whale, or a mermaid. As soon, however, as he was recognized, every rifle was levelled at him; and when they had tugged him home, raised him to the deck, and dissected him, his body was found perforated with six wounds, all mortal. The steward, to whom the honour was awarded of having lodged the bullet which had been actually fatal, was afterwards in honour decorated with the one which had been extracted from the gizzard. This bear when sliced into pieces did not prove such a god-send as his captors thought when they caught *him; for* the sailors, judging it indiscreet to eat of

an animal, the offal of which being eaten, had nearly killed a favourite fox on shipboard, threw the whole bit by bit into the sea. The grease, however, the crew had thought more highly of, as his lordship inferred from the sleek appearance they presented for days after. Indeed, the steward's head and whiskers, we are assured, rivalled in polish Day and Martin, and might have served for a mirror whereat his lordship, or another, could have seen successfully to shave. Such sport can healthy Englishmen, when together, extract from poor, barren solitudes, but whoso wishes to understand how they managed to do so, must consult Lord Dufferin's own narrative, and be of British blood.

XI.

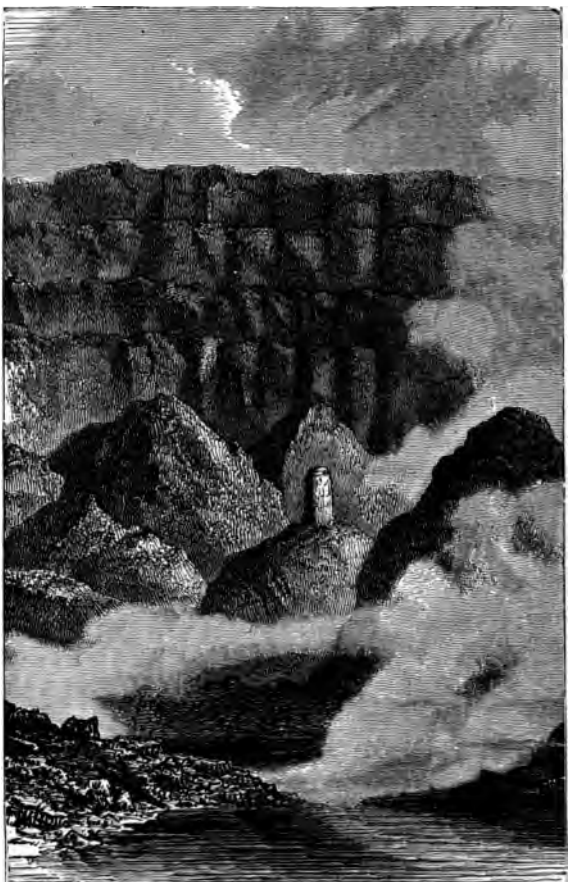
The Dead Sea and Pillar of Asdum.

THE Dead Sea, or, as the Arabs call it, the Sea of Lot, lies south-east of Jerusalem, and, extending from north to south, is 40 miles long by 9 of average breadth. Its surface occupies a lower level than any other expanse of water known to exist upon the globe, being 1312 feet lower than that of the Mediterranean. Its waters are supplied principally from the Jordan, which enters it at a point due east of the Holy City, and from the numerous ravines that terminate at its eastern and western shores, and pour down torrents in the rainy seasons. These waters have no outlet or escape except by evaporation; and this, as it takes effect only upon the water and not upon the mineral brought down in it, causes the Dead Sea to have the consistence and quality of highly-charged brine. The evaporation, owing to the excessive heat in summer, must be enormous; and under its action the water sinks and retires at this season by many feet. To the taste it is intensely salt and bitter; the spray of it is very painful to the eyes, and even lips and nostrils; and working a line in it, *to sound its* depth, for instance, makes the hands

smart and burn. The surface when calm is like a sea of molten lead, but when raised, which it often is by hurricanes, it looks a mass of phosphorescent foam, and its leaden waves threaten, by their mere weight, to smash and sink any craft at the mercy of them. Not a boat, accordingly, is to be found upon it; the Arabs have a proverb, "no one can venture into it and live;" and when they first saw a boat sailing over it, they thought it moved by legs, and could imagine no greater wonder when they understood its secret. The storms, though sudden and violent, generally soon allay themselves; and the moment the wind is down, the whole sinks at once into a dead level, without the shadow of a ripple at the margin. Only here and there is there noticeable a slight undercurrent or a superficial eddy caused by the flow of the Jordan. The saline matter in the water remains as an incrustation on everything that may happen to have been immersed in it or sprinkled by it; and the quantity of this matter contained in it is such, that a measure of it is one-fourth heavier than the same measure of ordinary water. The consequence is, that bodies float more lightly in it than in the ocean; a fresh-laid egg will buoy up out of the water here, by one-fourth of its mass nearly, when it would sink in the Mediterranean; a muscular man will swim in it almost breast high, while a horse can with difficulty do so without overbalancing. Not a single animal or plant can germinate, or even subsist for any time, in its waters, and most literally and truly is it the Dead Sea. Its bottom, which is covered with mud, from which have been fished

up, however, beautiful crystals, is 220 fathoms deep in some places in the north; but the water gets shallower as it extends south, and here by no possibility can even a light skiff come within a hundred yards of the shore. It is narrower as well as shallower in the south than in the north, and, indeed, this part seems to have sunk under water at a much more recent period.

The shores are mere waste and desolation, open and flat at the northern and southern extremities, but bounded by bare, often precipitous mountain-masses of, in some cases, 1000 feet high all along the east and west. These mountains are composed of limestone, resting in some quarters on a basis of sandstone, steep towards the sea, without a particle of vegetation, and broken at intervals by ravines stretching eastward and westward, and which terminate in deltas that project further into the sea than the sides of the mountains. The sea itself is entirely without smell, but the marshes in which the ravines terminate are mostly charged with sulphurous gases. Nowhere but in these ravines, or on their margins, is there any vegetation; and this, when it does occur, is in smallest tufts and patches. Not a thing grows, whatever its attraction to the eye, which is good for food, or can even be eaten. The apples of Sodom, as they are called, which are fair to the view, are bitter to the taste, and, when ripe, are mere dust and fibre. It is strange there is hardly a rounded pebble on the shore, and the pieces of rock on the beach have mostly sharp angles, and are composed chiefly *of flint.* Boulders even there are here and there;



PILLAR OF USDUM.

bits of lava and penetrating dust and ashes abound everywhere. Of bitumen and sulphur there is none found in the lake, but fragments are occasionally picked up on its borders. Birds of various kinds, though in no great numbers, hover round, and even fly over it; a stray waterfowl may be seen at times to venture on its bosom; and these, with the butterflies seen near it, are singularly nearly all of the same colour as the rocks they nestle in and hover over.

The western shores are, through the ravines, connected with Jerusalem and Bethlehem; and on the east is the country of Moab, or the children of Lot. The tribes in the neighbourhood are Arabs, living in the utmost wretchedness and poverty, and in constant feud with one another. Strictly temperate, truthful, and humane towards animals, they steal without compunction, and glory in slaying an enemy. The mountains round, especially towards the south-west, are pierced by caves which, in ancient times, formed retreats for the recluse or the refugee. Some of these are now inaccessible, being fifty feet above the banks of the ravine they were once entered by.

In the extreme south-west is a rocky barren district, like all the rest, called Usdum, *i.e.*, Sodom, which is the same name, with only the vowels different, as is common in the Semitic languages. This district, which is about four miles in length from north to south, is a hilly, craggy region of mere salt, encased in a browned crust of carbonate of lime. At fully a mile from its northern extremity you come, as you journey south, upon a round

apparently isolated from the general mass, at the head of a deep, narrow, and abrupt chasm. As you approach it, you find it composed of solid salt, with an almost perfectly cylindrical front, and capped with a layer of the carbonate. It is forty feet high, and rests on an oval pedestal nearly sixty feet above the level of the sea. It is one entire mass of crystallization, sloping slightly upwards and crumbling at the top, covered throughout with debris of a light stone colour. To some such pillar as this Josephus points in confirmation of the story of the judgment recorded in the Bible as having hereabouts overtaken Lot's wife, and the fact of its existence is repeatedly referred to by later writers as proof of the story. Of course it was felt by these authors that, being salt, it must melt readily; but they easily accounted for its continuance by supposing the waste to be ever supernaturally renewed. Be this as it may, the essential truth of the story of Lot's wife has been and will be borne out by the history of God's judgments all over the world; and nowhere is the fact of these judgments more impressively delineated than in the record of what befell on the morning when God overthrew the Cities of the Plani.